

SOUTHEAST

2002 Fisheries Resource Monitoring Plan

Review Draft

Federal Subsistence Management Program
August, 2001

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INTRODUCTION

Background

On October 1, 1999, the Secretaries of the Interior and Agriculture expanded Federal subsistence fisheries management in Alaska under Title VIII of ANILCA. To meet this management responsibility, the Federal Subsistence Board established the Fisheries Resource Monitoring Program to gather information on fish stock status and trends, subsistence harvest patterns, and traditional ecological knowledge. Improving the range of available information is crucial to effective fisheries management—both to protect Fisheries resources and to ensure the subsistence priority.

The Fisheries Resource Monitoring Program funds studies to gather, analyze, and report information needed to manage and conserve subsistence Fisheries resources, address fisheries issues and priorities identified by the Regional Advisory Councils, minimize Fisheries conflicts, and address regulatory actions before the Board. The Board has adopted a unified approach where Federal agencies work together with State, Tribal and local organizations. The Monitoring Program is multi-disciplinary, blending together the biological and social sciences with traditional ecological knowledge to manage and conserve Fisheries resources and ensure priority is given to subsistence users on Federal Conservation Units in Alaska.

The five Federal agencies work with Alaska Department of Fish and Game, Regional Councils, Alaska Native tribes, and other organizations to implement the Monitoring Program. The Federal Subsistence Board continues to rely on the special role of the Regional Councils to document Fisheries issues and data needs, and to provide recommendations on studies to implement the Monitoring Program. The purpose of this booklet is to document management issues and information needs, and to present the 2002 draft Fisheries Resource Monitoring Plan.

Study Selection Process

To develop an effective and scientifically sound monitoring program, local input on management issues and information needs is vital to ensure that the highest priority subsistence needs are addressed. During the winter 2001 and fall 2000 Regional Advisory Council meetings, the Councils were requested to provide this input as an important first step in the development of the 2002 Fisheries Resource Monitoring Plan. Subsistence users, the public, tribes, ADF&G, and Federal agencies worked with the Regional Advisory Councils to identify issues and information needs. This information is summarized in the overview for each region.

To ensure studies are scientifically sound and address subsistence priorities, the Board has developed a process where interested parties submit study proposals that address the management issues and information needs identified by the Regional Councils. Proposals are evaluated by Fisheries Information Services Division staff and the Technical Review Committee using four ranking factors: strategic priorities, technical-scientific merit, past performance-administrative expertise, and partnership-capacity building, as detailed on the next page.

RANKING FACTORS FOR FEDERAL SUBSISTENCE FISHERIES STUDIES

STRATEGIC PRIORITIES

Ideal studies will be responsive to the issues and information needs identified within the Regional Advisory Councils. Studies should address the criteria listed below and must fully meet the first criteria to be eligible for Federal subsistence funding.

1. **Federal Jurisdiction** – Issue or information needs addressed in studies must have a direct association to a subsistence fishery within a Federal Conservation Unit.
2. **Conservation Mandate** – Risk to the conservation of species and populations that support subsistence fisheries and risk to conservation unit purposes.
3. **Allocation Priority** – Risk of failure to provide a priority to subsistence uses and risk that subsistence harvest needs will not be met.
4. **Data Gaps** – Amount of information available to support subsistence management (higher priority given where a lack of information exists).
5. **Role of Resource** – Importance of a species to a subsistence harvest (e.g., number of villages affected, pounds of fish harvested, miles of river) and qualitative significance (e.g., cultural value, unique seasonal role).
6. **Local Concern** – Level of user concerns over subsistence harvests (e.g., allocation – upstream vs. downstream, recreational use concerns, changes in size of fish).

TECHNICAL-SCIENTIFIC MERIT

Technical quality of the study design must meet accepted standards for information collection, compilation, analysis, and reporting. Excellent studies will have clear study objectives, appropriate sampling design, correct statistical analysis procedures, and specified progress and final reports.

PAST PERFORMANCE-ADMINISTRATIVE EXPERTISE

Investigators and their organizations should have demonstrated technical and administrative expertise to complete the study or have co-investigators or appropriate partnerships with other organizations to meet all requirements of the study. Studies must be non-duplicative with other studies. Principal and co-investigators should possess the expertise required to complete the study and have had successful experience with similar studies.

PARTNERSHIP-CAPACITY BUILDING

Studies must include appropriate partners and contribute to the capacities of agencies, local communities, and residents to participate in fishery resource management. Studies must have completed appropriate consultation about their study with local villages and communities in the area where the study is to be conducted (letters of support from local organizations add to the strength of a proposal). Investigators and their organizations should be able to demonstrate the ability to maintain effective local relationships and a commitment to capacity building.

For studies that best meet the four ranking factors and address Regional Council priorities, investigation plans are prepared to more fully evaluate the studies against the ranking factors and

Council issues. The investigation plans are reviewed by the Technical Review Committee, and the highest quality proposals that address urgent management concerns are then put together into a draft monitoring plan. Because local involvement and capacity building are critical components of the Monitoring Program, the draft plan is presented to the Regional Councils for their review. Public input is also gathered, and the draft plan is presented to the Federal Subsistence Board, along with Regional Council and public comments. For the 2002 Monitoring Plan, the Board will make decisions on the final plan in December, 2001. Most studies approved by the Board will begin during summer, 2002.

2002 Fisheries Resource Monitoring Plan

In 2002, Congress continued to fund implementation of the Fisheries Resource Monitoring Program. During 2002, the U.S. Fish and Wildlife Service will provide \$5.25 million and the U.S. Forest Service will provide \$2.0 million, for a total of \$7.25 million for the continuation of existing studies and for new study starts. Money for new study starts, the 2002 Fisheries Resource Monitoring Plan, was first allocated by data type and geographic region to establish target budget levels for 2002 study funding:

- To maintain the multi-disciplinary approach of the Fisheries Resource Monitoring Program, two-thirds of the funding will be targeted at stock status and trends studies, and one-third at harvest monitoring and traditional ecological knowledge.
- The program also wishes to achieve an appropriate balance between the six geographic regions: Arctic/Kotzebue/Norton Sound, Yukon River, Kuskokwim River, Bristol Bay/Alaska Peninsula/Kodiak, Cook Inlet/Gulf of Alaska, and Southeast Alaska. It is recognized that, based on the distribution of Federal lands and waters, the management issues confronting the Board are greater in some regions than others. The Yukon and Kuskokwim rivers, for example, have large Federal land areas, with intensive subsistence fisheries. A portion of the funding is also allocated to inter-regional studies to address statewide concerns.

Other considerations and policy decisions entered into recommendations for 2002 study funding:

- The Technical Review Committee recommended studies that attempt to balance across species (salmon, resident species), study type (e.g., fish weirs, test fisheries, sonar, genetics, escapement, biology, harvest assessment, subsistence harvest mapping), and geographically within a region (up river, down river).
- At the direction of the Board, a minimum of 60% of the study funding is dedicated to non-Federal sources.
- The Board provided guidance on types of activities that they did not find appropriate for funding under the Fisheries Resource Monitoring Program. Activities not eligible for funding include: a) habitat protection, restoration, and enhancement; b) hatchery propagation, restoration, enhancement, and supplementation; and c) contaminant

assessment, evaluation, and monitoring. These activities on Conservation System Units would most appropriately be addressed by the land management agencies.

- In 2002, the Partners for Fisheries Monitoring Program will be implemented at a proposed budget of \$1.05 million. The Office of Subsistence Management will develop cooperative agreements to fill up to ten Partners for Fisheries Monitoring positions within Tribal, rural, or State organizations, including both fishery biologists and social scientists. These positions will help develop and implement Resource Monitoring Program studies, communicate the results of fisheries studies to various audiences (Federal Subsistence Board, Regional Advisory Councils, Office of Subsistence Management, regional organizations), and help develop the capacity of rural residents to effectively participate in the fishery management process.

Many studies approved by the Board in 2000 and 2001 were designed to continue on for several years. In 2002, approximately \$5 million is required to fund the continuation of 2000 and 2001 studies. When making study recommendations in 2001, the Committee recommended to the Board that approximately one-third of the Monitoring Program funds be made available to initiate new studies in 2002 and 2003. Using carryover balances from the Program's first year of implementation, the U.S. Fish and Wildlife Service and U.S. Forest Service are capable of providing \$2.1 million for new studies in 2002 (**Figure 1**).

In 2003, we currently estimate that \$1.2 million will be available for new studies. Unlike the 2002 process, investigation plans that are not selected for funding this year will not automatically become eligible for funding consideration next fiscal year. By insisting that investigators submit new proposals during the 2003 call for proposals, we will encourage submissions that: are current with Issues and Information Needs; addressed reviewer comments; and have updated their budgets. Investigators will need to submit new proposals requests for consideration of any new projects in 2003.

For the 2002 Fisheries Resource Monitoring Program, 120 new study proposals were submitted in February 2001. Of these, 48 were advanced for preparation of Investigation Plans. In addition, 9 studies submitted in 2001 that were not funded were advanced for reconsideration. The map below (**Map 1**) displays the geographic distribution of 57 studies advanced in 2002.

For the \$2.1 million available for new studies, the Technical Review Committee recommended 31 studies for funding in 2002, including 14 stock status and trends studies and 17 harvest monitoring and TEK studies (**Tables 1 & 2**).

The 31 studies represent a balanced mix of studies that address Regional Council concerns, improve and strengthen fisheries management, quantify harvests, employ traditional ecological knowledge, and address regulatory actions before the Board. All studies are technically sound and expand upon the science-based monitoring program initiated in 2000 and 2001. For the 2002 studies recommended for funding by the TRC, approximately 40% of the funding would be directed at Tribal and local organizations (Non-governmental Organizations or NGO), approximately 40% to ADF&G, and approximately 20% to Federal agencies (**Figure 2**).

Fisheries Resource Monitoring Program Project Commitments & Estimates (2000 - 2004)

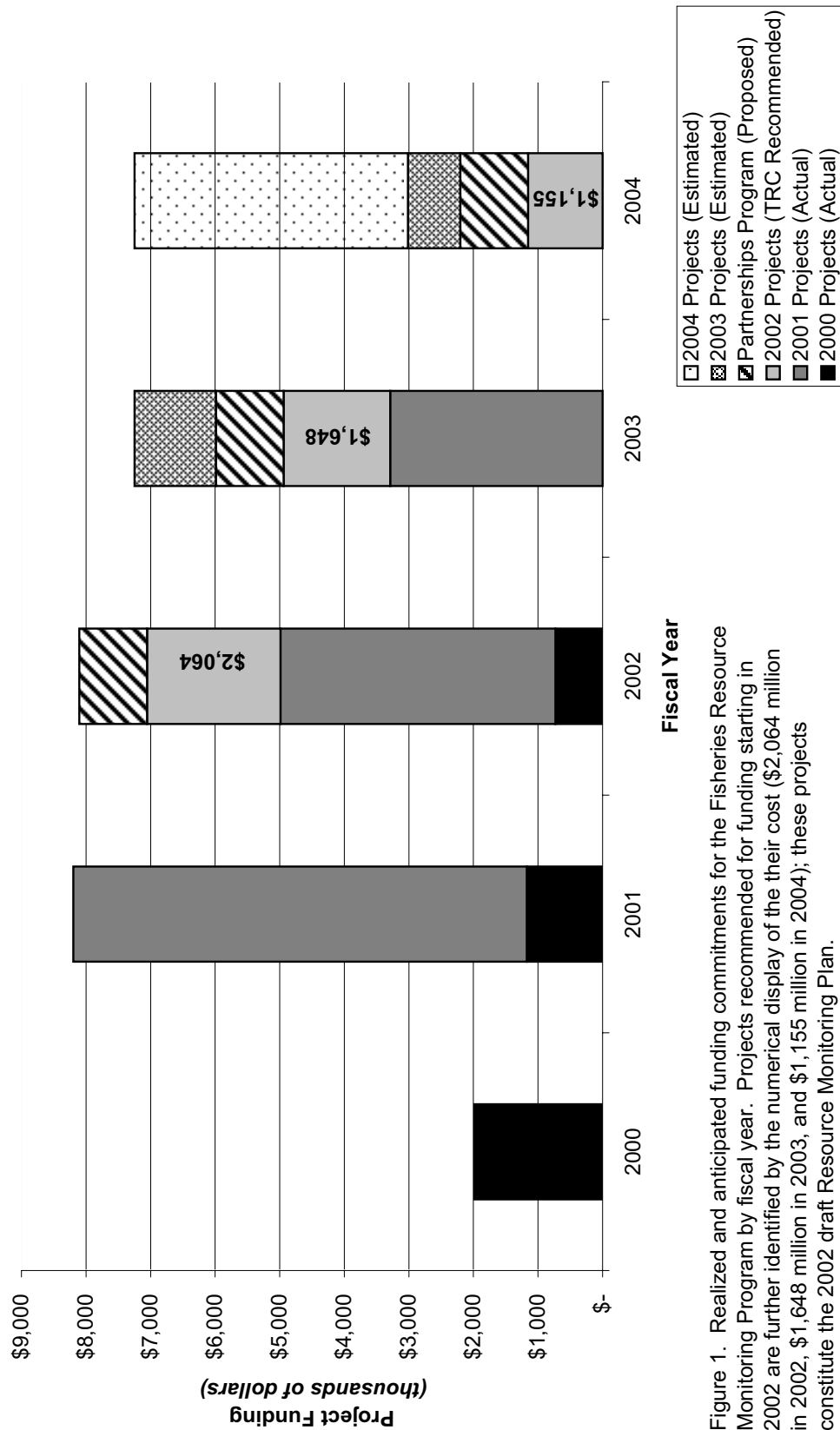


Figure 1. Realized and anticipated funding commitments for the Fisheries Resource Monitoring Program by fiscal year. Projects recommended for funding starting in 2002 are further identified by the numerical display of the their cost (\$2,064 million in 2002, \$1,648 million in 2003, and \$1,155 million in 2004); these projects constitute the 2002 draft Resource Monitoring Plan.

Map 1. Distribution of projects for funding consideration under the 2002 Fisheries Resource Monitoring Program

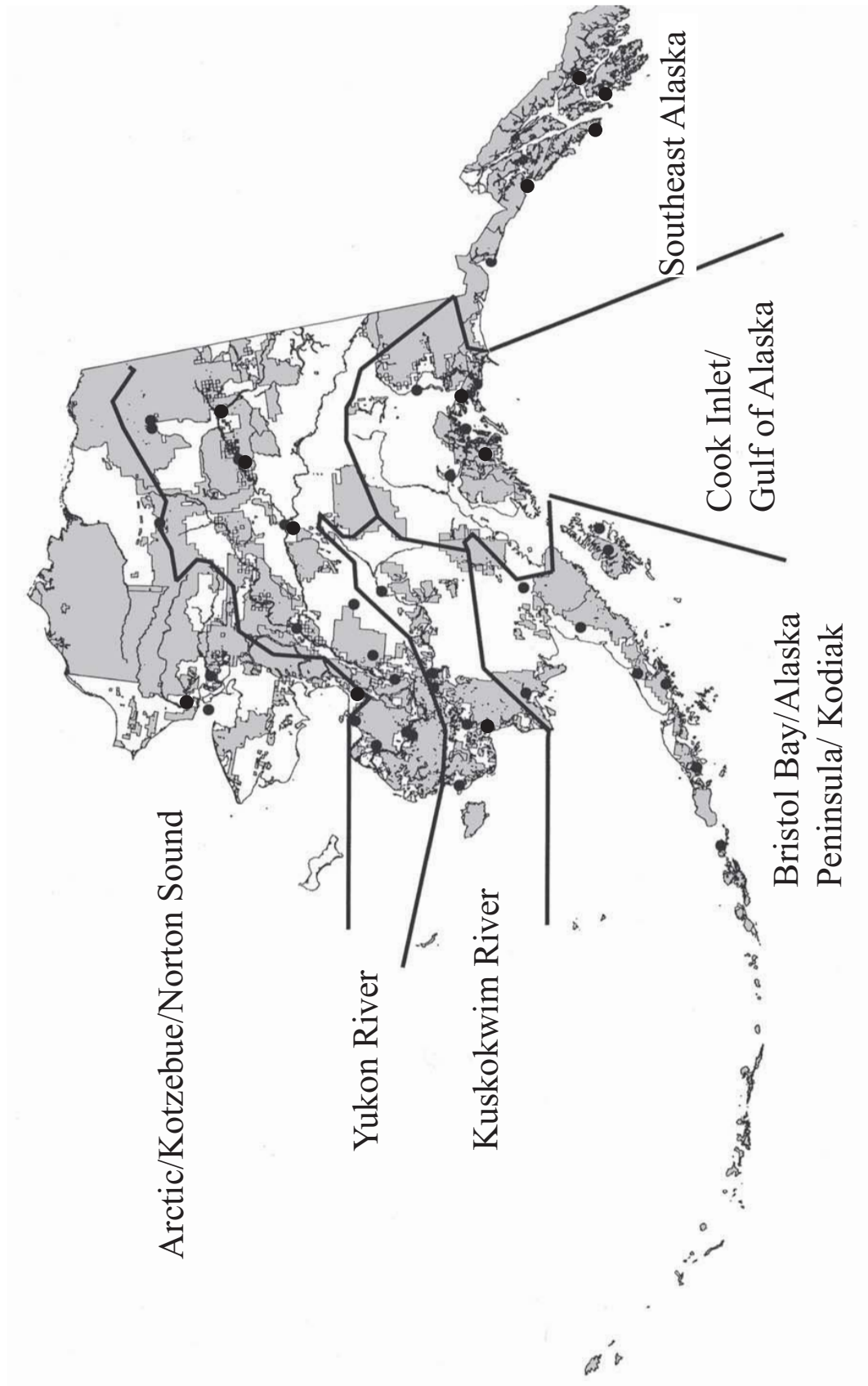


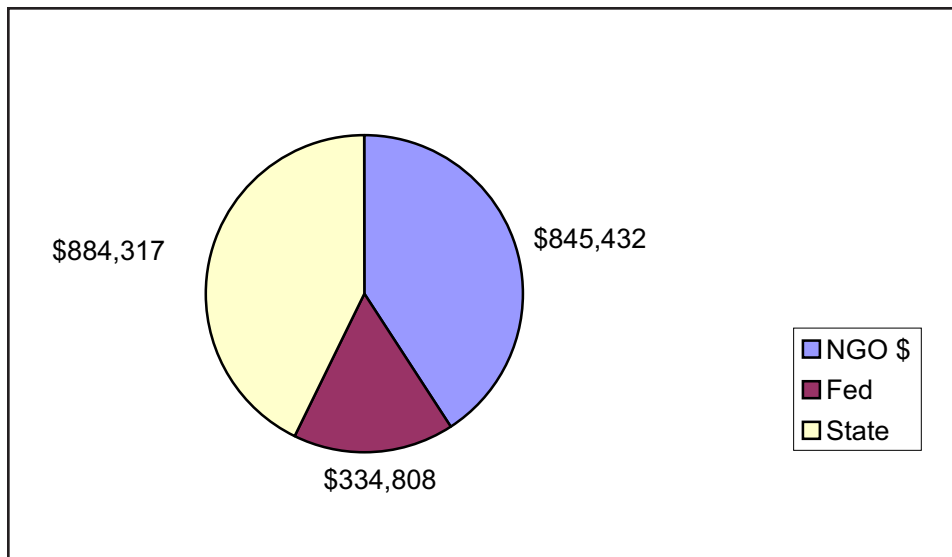
Table 1. Number of studies recommended for funding in fiscal 2002 by Technical Review Committee. Abbreviations for study information types are as follows: SST=Stock Status and Trends, HM=Harvest Monitoring, TEK=Traditional Ecological Knowledge

Unfunded 2001														
Geographic Region	Studies			New 2002 Studies			All Studies			Recommended Studies				
	SST	HM-TEK	Total	SST	HM-TEK	Total	SST	HM-TEK	Total	SST	HM-TEK	Total		
Arctic, Kotzebue, Norton Sound	0	0	0	3	4	7	3	4	7	1	3	4		
Yukon River	2	0	2	4	5	9	6	5	11	3	3	6		
Kuskokwim River	0	0	0	3	4	7	3	4	7	2	3	5		
Bristol Bay, Kodiak	4	0	4	2	3	5	6	3	9	3	1	4		
Cook Inlet, Gulf of Alaska	1	1	2	3	3	6	4	4	8	1	3	4		
Southeast	1	0	1	5	4	9	6	4	10	2	3	5		
Inter Regional	0	0	0	3	2	5	3	2	5	2	1	3		
Total	8	1	9	23	25	48	31	26	57	14	17	31		

Table 2. Cost of proposals recommended for funding in 2002 by the Technical Review Committee. Funding shown in thousands of dollars

Geographic Region	SST Studies		HM-TEK Studies		All Studies	
	Target	Recommended	Target	Recommended	Target	Recommended Difference
Arctic, Kotzebue, Norton Sound	\$161.0	\$20.0	\$81.0	\$182.0	\$242.0	\$202.0 \$40.0
Yukon River	\$275.0	\$251.0	\$138.0	\$132.0	\$413.0	\$383.0 \$30.0
Kuskokwim River	\$275.0	\$283.0	\$138.0	\$111.0	\$413.0	\$394.0 \$19.0
Bristol Bay, Kodiak	\$142.0	\$134.0	\$71.0	\$91.0	\$213.0	\$225.0 -\$12.0
Cook Inlet, Gulf of Alaska	\$194.0	\$229.0	\$97.0	\$97.0	\$291.0	\$326.0 -\$35.0
Southeast	\$282.0	\$287.0	\$141.0	\$141.0	\$423.0	\$428.0 -\$5.0
Inter Regional	\$70.0	\$78.0	\$35.0	\$28.0	\$105.0	\$106.0 -\$1.0
Total	\$1,399.0	\$1,282.0	\$701.0	\$782.0	\$2,100.0	\$2,064.0 \$36.0
Percent of Grand Total	67%	62%	33%	38%		

Figure 2. 2002 Funding Distribution



Recommendations by the Technical Review Committee represent the Draft Resource Monitoring Plan for 2002, and we look forward to gaining input from the Regional Councils and the public.

How to Provide Your Comments

We invite your review and comments on the draft 2002 Fisheries Resource Monitoring Plan. Regional Council members will have an opportunity to review the Monitoring Plan during Council meetings in the fall of 2001.

The Board welcomes your comments by October 31, 2001. These will be compiled along with the Regional Council comments and will be presented to the Board when it meets in December. Written comments may be submitted to:

USFWS Office of Subsistence Management
Attn: Richard Cannon
3601 C Street, Suite 1030
Anchorage, Alaska 99503
telephone: 1-800-478-1456 Fax: 907-786-3898
e-mail: Richard_Cannon@fws.gov

SOUTHEAST REGION OVERVIEW

Issues and Information Needs

The primary input for identification of important issues and information needs came from the Regional Advisory Council. These issues were presented in the November 15, 2000 document: *Issues and Information Needs, Federal Subsistence Fisheries Monitoring Program*. In March, the Regional Advisory Council updated their advice regarding project priorities and recommended projects that address (in order of importance):

- TEK
- Harvest Monitoring
- Salmon assessment, particularly sockeye and coho
- Regulation review

In previous meetings, the Regional Advisory Council identified specific locations for study. All of these locations are salmon systems and most were already addressed in FY2000 or FY2001 projects. To this list, they added Karta Lake; and also a non-salmon issue – Unuk River eulachon.

Regulatory issues of the Federal Subsistence Board also provided an important source of input for identification of issues and informational needs. During the upcoming regulatory cycle, the Southeast Region accounts for approximately ½ of all of the regulatory proposals before the Federal Subsistence Board. Regulatory issues before the Board that are germane to project selection include:

- Regulatory proposals regarding sockeye salmon in select systems, particularly those in and around Sitka Sound
- Regulatory proposals regarding steelhead on Prince of Wales Island
- Regulatory proposals regarding eulachon in Behm Canal, particularly the Unuk River.

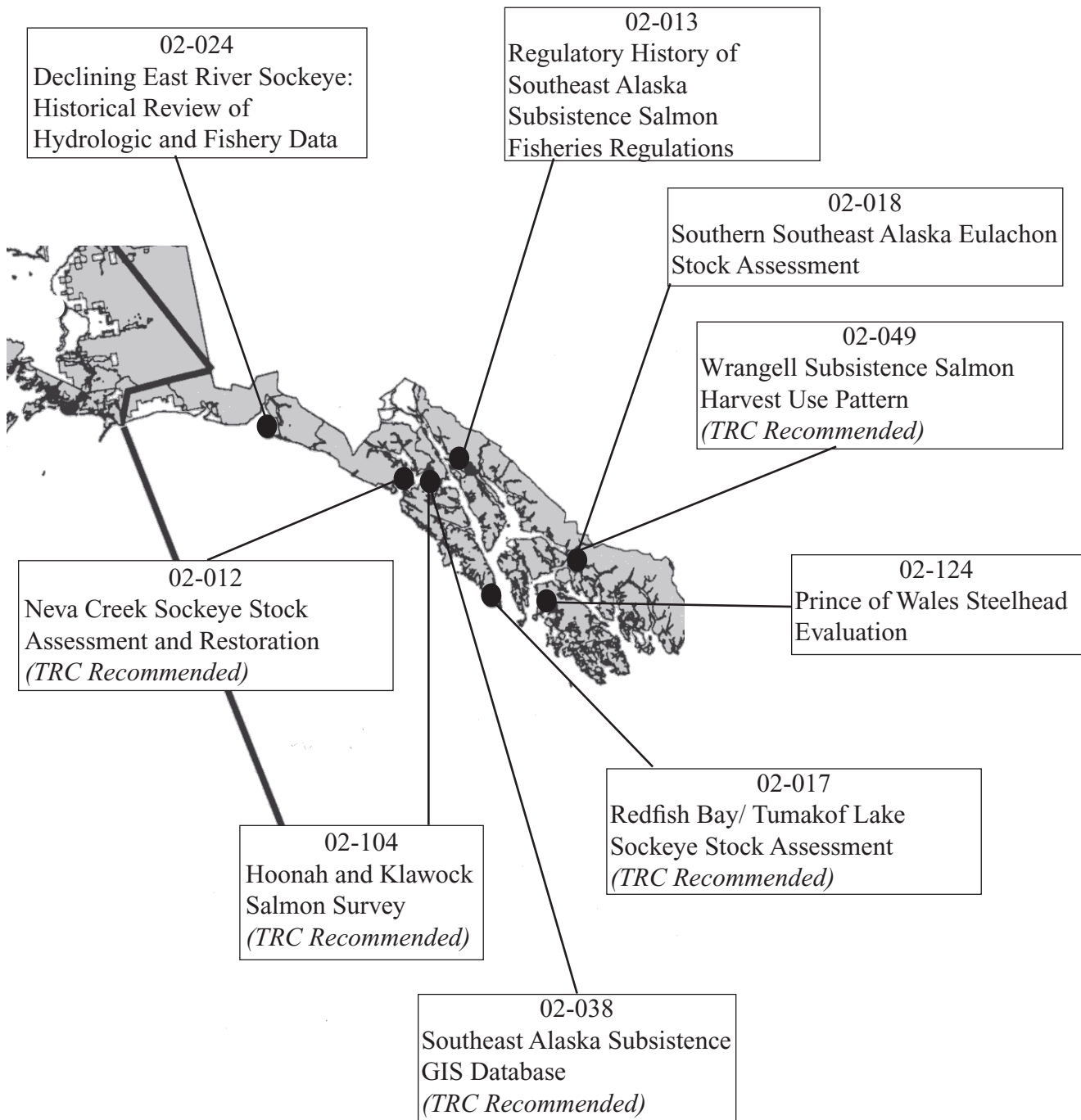
Projects Forwarded for Investigation Plans

A total of 10 projects were forwarded by the TRC for development of Investigation Plans. These projects are located throughout the southeast region (Map 1).

Investigators worked with reviewers from the Office of Subsistence Management to develop project objectives and methodology. Project budgets were submitted for each investigating

Locations of Projects Advance for Preparation of Investigation Plans

Southeast, Alaska



agency and are summarized here by federal, state, and non-government organization (NGO) (Table 1).

As part of the project budget information, investigators were also asked to identify that portion of the project budget dedicated to local hire (personnel costs for which there is a hiring preference for federally qualified subsistence users) (Table 2). In addition to the project budget being requested from the Resource Monitoring Program, investigators were also asked to identify any matching funds being provided by their agency or organization (Table 2).

Recommendations for Funding - Stock Status and Trends Projects

A total of six projects were advanced for development of Investigation Plans in the Stock Status and Trends (SST) category (Table 3). Four of the SST projects address salmon assessment; three sockeye projects and one coho project. The investigator elected to withdraw project 02-039 (*Prince of Wales Coho Foot Survey Evaluation*) from further consideration. The remaining SST projects consisted of one that addresses steelhead assessment on Prince of Wales Island, and one that addresses eulachon assessment in Behm Canal. Funding requested for SST studies totaled \$698,300 for FY2001, which is in excess of the \$282,000 available for the Southeast Region SST project category in FY2002.

One or more reviewers on the Technical Review Committee reviewed each of the five SST projects. The basis for their review was previously described, and focused on:

- strategic importance or need for the information
- technical and scientific merit
- past performance and administrative expertise of the principle investigators (PI's)
- partnership and capacity building.

The following sections of your book present more detailed information on each project advanced for development of an Investigation Plan. Included are a summary of what the project proposed to address and accomplish; the TRC recommendation for funding in FY2002; and their justification for that recommendation.

The five projects under consideration were all viable candidates for funding. Each project addresses assessment of a fish population utilized by federally qualified subsistence users. Each project is technically sound; although some were stronger than others. Capacity building aspects of these projects varied widely.

After careful consideration, the Technical Review Committee recommended funding of two SST projects that address sockeye salmon: 02-012 *Neva and Pavlof Sockeye Salmon Stock Assessment*; and 02-017 *Redfish Bay/Tumakof Lake Sockeye Stock Assessment* (Table 3). Sockeye salmon are the fish species of greatest importance to federally qualified subsistence users in Southeast. Redfish Bay is the subject of a regulatory proposal before the Federal Subsistence Board and both the Neva and Pavlof systems appear to have weak returns. Both of these projects utilize proven technology to assess salmon returns and are technically strong. Both projects have strong capacity building components.

Table 1.

FY 2002 Southeast Projects

Region		6. Southeast				
Type		A . Stock Status & Trends				
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
01-124	ADFG-SFD	Prince of Wales (POW) Steelhead Snorkel Survey Evaluation	\$0.00	\$0.00	\$210,435.23	\$210,435.23
02-012	USFS, HIA	Neva and Pavlof Sockeye Salmon Stock Assessment	\$47,711.00	\$39,135.00	\$0.00	\$86,846.00
02-017	STA, ADFG-CFD, USFS	Redfish Bay/Tumakof Lake Sockeye Stock Assessment	\$114,294.00	\$21,126.00	\$65,041.58	\$200,461.58
02-018	ADFG-CFD, USFS	Southern Southeast Alaska eulachon stock assessment	\$0.00	\$0.00	\$36,733.76	\$36,733.76
02-024	NPS, YTT, CBY	Declining East Alesek River Sockeye, review of hydrologic and fishery data	\$40,250.00	\$31,800.00	\$0.00	\$72,050.00
Total			\$202,255.00	\$92,061.00	\$312,210.57	\$606,526.57
Type		B. Harvest Monitoring/TEK				
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-013	ADFG-SD, Andrews	Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations	\$23,600.00	\$0.00	\$7,000.00	\$30,600.00
02-038	ADFG-SD, CCTHIT, TST	Southeast Alaska Subsistence Fisheries Geographic Information System (GIS) Database Development	\$27,889.00	\$0.00	\$12,111.00	\$40,000.00

Table 2.

FY 2002 Local Hire and Matched Funds Report Southeast

Region 6. Southeast

Type A . Stock Status & Trends

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
01-124	ADFG-SFD	Prince of Wales (POW) Steelhead Snorkel Survey Evaluation	\$86,383.00	\$0.00
02-012	USFS, HIA	Neva and Pavlof Sockeye Salmon Stock Assessment	\$42,759.00	\$28,000.00
02-017	STA, ADFG-CFD, USFS	Redfish Bay/Tumakof Lake Sockeye Stock Assessment	\$58,260.00	\$0.00
02-018	ADFG-CFD, USFS	Southern Southeast Alaska eulachon stock assessment	\$0.00	\$0.00
02-024	NPS, YTT, CBY	Declining East Alsek River Sockeye; review of hydrologic and fishery data	\$25,800.00	\$33,820.00
Total			\$213,202.00	\$61,820.00

Type B. Harvest Monitoring/TEK

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-013	ADFG-SD, Andrews	Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations	\$0.00	\$0.00
02-038	ADFG-SD, CCTHIT, TST	Southeast Alaska Subsistence Fisheries Geographic Information System (GIS) Database Development	\$0.00	\$0.00
02-049	ADFG-SD, WCA	Wrangell Subsistence Salmon Harvest Use Pattern	\$6,168.78	\$0.00
02-104	CCTHIT, ADFG-SD, Private	Hoonah and Klawock Salmon Survey	\$6,856.00	\$0.00
Total			\$13,024.78	\$0.00
Grand Total			\$226,226.78	\$61,820.00

Table 3. Proposed recommendations of FY 2002 Southeast stock status and trends investigation plans for consideration. Proposed recommendations are shown with bold type and noted with a "Yes" in the "Recommendation" column.

FIS#	Title	Recommendation	Requested Budget		
			2002	2003	2004
<u>Salmon Stock Status</u>					
02-012	Neva Creek Sockeye Stock Assessment and Restoration	Yes	\$86.8	\$76.5	\$79.5
02-017	Redfish Bay/Tumakof Lake Sockeye Stock Assessment	Yes	\$200.5	\$192.0	\$200.8
02-024	Declining East River Sockeye: Historical Review of Hydrologic and Fishery Data	No	\$72.1	\$11.4	
02-039	Prince of Wales Coho Foot Survey Evaluation	Withdrawn	\$100.9	\$68.5	\$68.5
<u>Steelhead Stock Status</u>					
01-124	Prince of Wales Steelhead Evaluation	No	\$210.4	\$153.8	\$153.8
<u>Smelt Stock Status</u>					
02-018	Southern Southeast Alaska Eulachon Stock Assessment	No	\$36.7	\$38.0	\$40.0
GRAND TOTALS			\$707.4	\$540.2	\$542.6
TARGET BUDGET LEVELS			\$282.0	\$250.1	\$549.8
PROPOSED SELECTIONS			\$287.3	\$268.5	\$280.3

The recommendation to not fund the remaining projects is primarily driven by limited funding, as well as some other issues. The remaining sockeye project; 02-024 *East River Sockeye Review of Hydrologic and Fishery Data*, suffers from lack of a permanent PI. The steelhead project; 01-024 *Prince of Wales Steelhead Evaluation*, is technically strong and directly addresses a regulatory proposal that is again before the Federal Subsistence Board. However, the Board did not approve the identical regulatory proposal last year, which limits rationale for additional steelhead assessment for purposes of subsistence management. The eulachon project; 02-018 *Southern Southeast Alaska Eulachon Stock Assessment*, also addresses regulatory proposals before the Federal Subsistence Board. However, assessment of eulachon is extremely difficult and there is little opportunity for capacity building.

Recommendations for Funding – Harvest Monitoring and TEK Projects

There were four projects advanced for Investigation Plan development in the Harvest Monitoring and Traditional Ecological Knowledge categories (Table 4). Funding requested for HM/TEK studies totaled \$280,300, which is in excess of the \$141,000 available for the Southeast Region HM/TEK project category.

One or more reviewers on the Technical Review Committee reviewed each of the four HM/TEK projects. The basis for their review was previously described, and focused on:

- strategic importance or need for the information
- technical and scientific merit
- past performance and administrative expertise of the principle investigators (PI's)
- partnership and capacity building.

The following chapters of your book present more detailed information on each project advanced for development of an Investigation Plan. Included are a summary of what the project proposed to address and accomplish; the TRC recommendation for funding in FY2002; and their justification for that recommendation.

After careful consideration, the TRC recommended funding for three projects for FY2002 (Table 4). Because full funding for these three projects exceeded the available budget in FY2002, the TRC further recommended that the scope of these projects, and their funding, be reduced in FY2002. The TRC made this recommendation because they concluded that these three projects could effectively be implemented on a reduced basis (and reduced cost) in FY2002; and then conclude their work (and receive the full balance of the project funding) in FY2003. The TRC elected this strategy because they felt that all three projects were sufficiently important to initiate in FY2002, despite funding limitations. This revised strategy of implementation and funding was then cleared with the investigators. The three projects recommended for funding in FY2002 are: 02-049 *Wrangell Subsistence Salmon Harvest Use Pattern*; 02-104 *Hoonah and Klawock Salmon Survey*; and 02-038 *Southeast Alaska Subsistence GIS Database*. In total, these projects fund harvest monitoring surveys in key communities, and add to database management capabilities. Project 02-013 *Regulatory History of SE Alaska Subsistence Salmon Fisheries* is duplicative of existing work and is not recommended for funding in FY2002.

Table 4. Proposed recommendation of FY 2002 Southeast harvest monitoring and Traditional Ecological Knowledge investigation plans for funding consideration. Proposed recommendations are show with bold type, and noted with a "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-013	Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations	No	\$30.6		
02-049	Wrangell Subsistence Salmon Harvest Use Pattern	Yes ^a	\$21.0	\$43.7	
02-104	Hoonah and Klawock Salmon Survey	Yes ^b	\$80.0	\$25.0	
02-038	Southeast Alaska Subsistence GIS Database	Yes ^c	\$40.0	\$40.0	
GRAND TOTALS			\$171.6	\$0.0	\$0.0
TARGET BUDGET LEVELS			\$141.0	\$275.2	\$275.2
PROPOSED SELECTIONS			\$141.0	\$108.7	\$0.0

^a Originally proposed as a one-year project budgeted at \$64.7. Per review recommendation, activities and budget were reallocated between two years.

^b Originally proposed as a one-year project budgeted at \$105.0. Per review recommendation, activities and budget were reallocated between two years.

^c Originally proposed as a one-year project budgeted at \$80.0. Per review recommendation, activities and budget were reallocated between two years.

Each of these projects contributes to new partnerships and participation of local residents in fisheries research. Rural organizations in Wrangell, Hoonah, and Klawock will serve as co-investigators in these projects.

Recommendations for Funding – Summary

In total, the five projects recommended for funding address important strategic priorities and employ sound technical methods. Budgets for those projects recommended for funding are summarized by each investigating agency or NGO (Figure 1). As recommended, spending for the FY2002 Fisheries Resource Monitoring Plan in Southeast would be allocated as follows: 14% federal, 26% state, and 60% NGO.

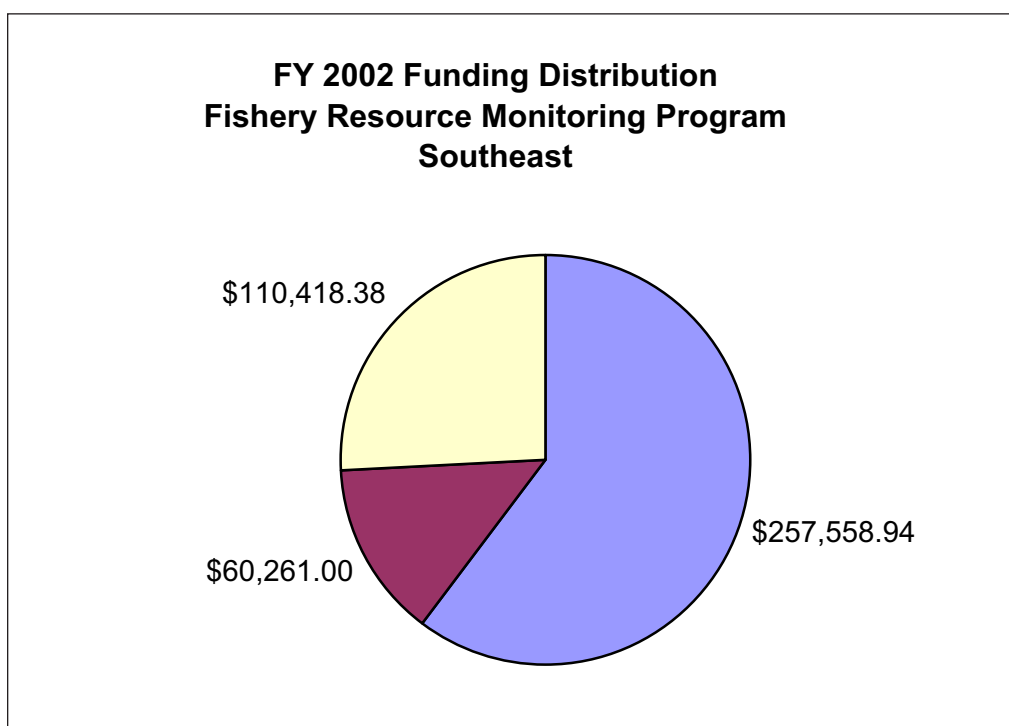


Figure 1.

Project Descriptions, Recommendations and Justifications

You will find additional details about each project in the sections that follow. For each project, we have included a brief description of the issue, methods, the experience of the investigators, and the partnership components. For each project, the TRC's recommendation for funding is noted, as well as the justification for that recommendation.

The project descriptions are organized first by data category (SST and HM/TEK); and then project number within each data category.

Southeast Alaska
Stock Status and Trends Projects

02-012

Neva and Pavlof Sockeye Salmon Stock Assessment

Investigator(s): Juneau Ranger District, U.S. Forest Service; Hoonah Indian Association**FY2002 Budget:** \$ 86,846.00**Total Budget (3 years):** \$ 242,848.00**Geographic Area:** Southeast**Information Type:** SST**Issues:**

This study focuses on collecting the basic escapement and lake productivity information needed to assess the health of these sockeye runs and the adequacy of the returns for meeting escapement and subsistence needs. There is very little salmon stock assessment information available for either Neva or Pavlof Lake sockeye. The State has had to close or restrict subsistence/personal use fisheries on these stocks following concerns about the health of these runs and a lack of funding for basic stock assessment, management, and enforcement activities.

Objectives:

- 1) Estimate the escapement of sockeye salmon into Neva Lake such that the estimate is within 10% of the actual abundance 95% of the time.
- 2) Index the escapement of sockeye salmon into Pavlof Lake such that:
 - the index reflects the actual annual abundance; and
 - the index is not biased high.
- 3) Estimate the age, length, and sex composition of the sockeye escapements into Neva and Pavlof Lakes such that the estimates are within 10% of the true composition, 95% of the time.
- 4) Estimate the sockeye carrying capacity in Neva and Pavlof Lakes using established ADF&G limnological sampling and analytical procedures.

Methods:

Data collected on the physical and hydrological characteristics of the lake and zooplankton biomass estimates combined with the annual indices or estimates of escapements will be used to assess the current and potential status of these sockeye stocks. This study provides the baseline data needed to quantify escapement goal ranges needed to sustain, if not maximize the sockeye production in these systems. At Neva Lake the adult escapement will be estimated by counting the sockeye as they pass through a fence (weir) on Neva Creek and validated with a weir-based mark-recapture study. In-lake mark-recapture studies will be calibrated with the weir-based estimates of escapement providing a means of estimating escapements in future years without the expense of operating a weir. At Pavlof Lake the sockeye escapement will be indexed with a multiple mark-recapture census of the sockeye spawning in the main inlet stream.

Deliverables/Products:

USFS biologists will collaborate with Hoonah Indian Association staff to write annual progress reports and a final project report. These reports will summarize project accomplishments, findings, and recommendations for further work.

Experience of Investigator(s):

Ben Van Alen and Chuck Parsley with the U.S. Forest Service in Juneau and Hoonah have many years of experience with the various aspects of this study including weir operation, mark-recapture censusing of adult salmon, sampling for age, sex, and size data, and collection of routine limnological/lake productivity data. Chuck Parsley has a good working relationship with the Hoonah Indian Association. Ben Van Alen has experience with design and analysis of mark-recapture experiments and with estimating the status of stocks using spawner-recruit and habitat-based models. The Hoonah Indian Association includes members with natural resource management experience and many members with a long tradition of fishing at Neva and Pavlof and experience with handling salmon and work in field settings.

Partnerships/Collaboration/Consultations:

This project will promote a close working relationship among our agencies. Hoonah Indian Association will receive funds and the responsibility for employing and provisioning two fisheries technicians. Their late-summer/fall employment involves fieldwork at both Neva and Pavlof that includes a wide variety of modern fisheries and limnology sampling activities. Field activities will likely include construction and maintenance of a field camp, operation of boats, nets, and limnology sampling gear. The interagency cooperation needed to plan, implement, and report on this project will help HIA's capacity for resource monitoring. This project complements the other cooperative Tribal/USFS/ADF&G federal subsistence stock status and trend projects that began in 2001 with the communities of Hydaburg, Klawock, Wrangell, Kake, Angoon, and Sitka.

Justification:

This proposal would provide funding for basic escapement assessment in two small sockeye systems. Weirs and tagging would be conducted to estimate escapement, escapement sampled for age-sex-size data, and basic limnology sampling conducted. At issue are small systems for which there is little escapement information and reported recent declines in production. This IP differs in scope from the original proposal in that: work to assess enhancement was dropped per the reviewer recommendation; and Pavlof Lake was added.

Strategic Priority: High. This proposal addresses sockeye salmon, which is a high priority for information needs. Neva Lake supports a small subsistence harvest, which has declined in recent years. Currently, subsistence regulations for this system are restrictive (10/year). Pavlof Lake has been closed under state regulations. These systems are the nearest sockeye producers to Hoonah. A reduction in subsistence harvest from these systems has resulted in some shift in effort to other systems.

Technical Merit: High. As proposed, escapement and limnology sampling are appropriate and technically sound. Statistical objectives address management application. The IP adequately addresses study design, data collection, and data analysis. Both annual and final reports are specified and adequate. The budget appears reasonable to conduct this work.

Past Performance: High. The investigators have the expertise to successfully conduct this work.

Capacity Building: High. Per reviewer recommendation regarding the proposal, the Hoonah Indian Association was added as an investigator and directly contracted to conduct some of this work. Approximately 55% of the FY01 budget is directly contracted to HIA. Approximately \$42.8K or 48% of the FY01 budget is for local hire.

Work to conduct basic stock assessment to determine sustainable yield for subsistence use is appropriate. This IP is technically sound and the project is ready to be implemented.

02-017

Redfish Bay/Tumakof Lake Stock Assessment Project

Investigator(s): Sitka Tribe of Alaska; Commercial Fisheries Division, Alaska Department of Fish and Game; Sitka Ranger District, U.S Forest Service

FY2002 Budget: \$ 200,461.58

Total Budget (3 years): \$ 593,270.00

Geographic Area: Southeast

Information Type: SST

Issues:

Investigators will collect escapement, limnological, zooplankton and fry abundance, terminal harvest data on sockeye salmon in Redfish Bay/Tumakof Lake to determine escapement thresholds necessary to build/sustain healthy adult returns to the subsistence fishery.

Objectives:

- 1) Estimate the escapement of sockeye salmon into Tumakof Lake, with the aid of a weir on the outlet stream of the lake and an additional mark-recapture study, such that the estimates are within 10% of the actual abundance 95% of the time.
- 2) Estimate the subsistence harvest of sockeye salmon from Redfish Bay such that the estimate is within 15% of the actual harvest 90% of the time.

Methods:

The annual escapement of sockeye salmon into Tumakof Lake will be estimated by weir counts. Approximately 50% of the fish will be marked at the weir and a survey of the marked/unmarked ratio on the spawning beds will be used to validate the weir counts. In addition, a multiple mark-recapture experiment will be conducted on the spawning grounds to estimate the number of adult sockeye salmon returning to the lake (Cook 1998). Four or five mark-recapture events will be conducted on the spawning beds to get 4-5 two-day Petersen estimates (Cook 1998). A Jolly-Seber multiple mark-recapture analysis will be used to estimate the total annual sockeye salmon escapement (Cook, 1998). The in-lake mark-recapture study serves 2 purposes: 1) it will be compared to the weir counts and 2) it can be used to obtain point estimates to index sockeye salmon abundance without the use of a weir in future years. The age, sex, and size (AWL) composition of sockeye salmon will be estimated and used to construct multiple brood year tables. The seasonal collection of zooplankton samples and light, temperature and dissolved oxygen profiles will be used in lake rearing models to estimate sockeye salmon fry production (Zadina and Weller 1999). This estimate will be compared to a fall hydroacoustic estimate of sockeye salmon fry abundance in the lake. Subsistence and sport fish harvest will be estimated

by means of an on-site, directed expansion creel survey, following the design of the 2001 Falls Lake sport and subsistence fishery effort and harvest survey (Bernard et al. 1998). In summary, the physical characteristics of the lake, zooplankton biomass, sockeye salmon fry abundance, terminal area harvest, and adult escapement estimates will be compiled to develop a range of escapement goal ranges for sockeye salmon returning to Redfish Bay and Tumakof Lake.

Deliverables/Products:

Project data will be made available in an internet-accessible database. Annual progress reports and a final project report will be provided in print and electronic format. Project findings will be discussed in one or more public meetings. Escapement estimates produced by this project will be used as the basis for future management decisions.

Experience of Investigator(s):

The Sitka Tribe has two Fisheries Biologists who have worked in the field and on projects with other cooperating agencies. They have experience in stream escapement surveys, species identification, limnological surveys, habitat assessments, spring smolt population estimates, smolt and adult weir operations, CWT operations, remote egg take operations, flight surveys, channel typing, water chemistry, watershed health assessments, bioassays, minnow trapping, hatchery operations, net pen rearing of outmigrant smolts, biomass estimates, and other biological assessments. The Tribe has participated in the Alaska Board of Fisheries and Regional Advisory Council processes. The Tribe has also had Traditional Use and Occupancy of the Redfish Bay area for countless generations and has an extensive resource of elders with Traditional Knowledge of this watershed. It is in the Tribe's best interest to be involved in the management, decision-making and operations of these resources of long-standing importance to its members.

The Alaska Department of Fish and Game, Commercial Fisheries Division, Southeast Region staff has many years of demonstrated experience with all facets of this proposal. Staff includes biologists, biometricians, limnologists, and technicians experienced with sockeye stock assessment, weir and mark-recapture methods, creel survey methods, scale reading/aging, and analysis of lake productivity. Project biologists are experienced in project planning, analysis and reporting, and work regularly on escapement enumeration projects involving weirs, mark-recapture, and aerial/foot surveys and with hydroacoustic, smolt and limnological sampling. The Department also has information technology personnel and an integrated fisheries database for secure archiving and timely retrieval of project data. ADF&G and USFS have cooperated on studies to enumerate sockeye escapements into Redoubt, Falls, Kook, and Sitkoh Lakes in recent years; this project plan builds directly on this work.

U.S. Forest Service biologists in the Sitka Ranger District have also conducted salmon stock assessment and habitat monitoring projects in southeast Alaska for many years. Project biologists are experienced with operation of adult and smolt weirs for salmon, coded-wire tagging, radio telemetry, limnology, creel census, bioenhancement, basin wide stream surveys and habitat

mapping, pre-enrichment studies, and mark-recapture studies. The Sitka Ranger District has a working relationship with the Sitka Tribe of Alaska in resource use and protection matters.

Partnerships/Collaboration/Consultations:

Several consultations have occurred between the U.S. Forest Service, Sitka Ranger District, and the Sitka Tribe of Alaska, by phone and in person. Joint planning is underway for cooperative projects with these three partners at Falls Lake and Klag Bay, using similar project designs. ADF&G will be responsible for development of the study design and analysis and reporting of project data. STA will be responsible for the field data collection activities and logistics associated with this project. USFS will provide support for the project design and field operations. By providing field crew to conduct the data collection phase of the project, and assisting with planning and logistical support, the Sitka Tribe will increase its capacity for resource monitoring.

Justification:

This proposal would provide funding for basic escapement and on-site harvest assessment for Tumakof Lake and subsistence fishery in Redfish Bay. A weir would be installed to estimate escapement, and subsistence harvest estimated through a direct expansion survey design. In addition, escapement would also be estimated through tagging as a possibly less expensive long-term alternative to a weir. At issue is a sockeye system for which there is little escapement information, and some redistribution of subsistence effort from Sitka.

Strategic Priority: High. This proposal addresses sockeye salmon, which is a high priority for information needs. Tumakof Lake supports some subsistence harvest, which has ranged as high as 1,100 sockeye. However, these harvest data are estimated from permits, and there is some question regarding the accuracy of these estimates. It is believed that some subsistence effort is being displaced to this location, due to declines in returns to systems closer to Sitka. Sport harvest was not reported and is likely very small. A weir was operated during the late 1960's and escapement averaged 35,000 sockeye. The 2000 return was likely over-harvested by a commercial purse seiner who fished in closed waters.

Technical Merit: High. As proposed, the weir, escapement sampling, tagging, and fishery surveys appear appropriate to address the issues. Statistical objectives address management applications. In the original IP, some important details in the Methodology were omitted. However, the investigators provided supplemental information regarding several key issues. Additionally, the investigators and this reviewer recently conducted a site visit. Regarding weir operation: a weir site was selected and a tripod/picket weir will be suitable; dates of operation will be based on timing of harvest data. Regarding AWL sampling: sampling will be stratified by three periods with sample sizes at 600 per stratum; sampling rates will be adjusted to reflect differential run strength. Regarding marking: differential fin clips will be used as both primary and secondary marks; and also for differential marking for the three sampling strata (above). Regarding estimation of subsistence and sport harvest: these fisheries clearly occur at the confluence of the creek and bay and should be appropriate for direct expansion methodology; sampling will be stratified by weekend/weekday. Although not listed as a co-investigator,

technical expertise has been provided by ADFG, Sport Fish Division in designing other harvest surveys and will also be done here. The IP speaks to limnological sampling to assess lake rearing capacity; however, an appropriate objective and sampling methodology should be provided. Annual and project reports are specified; although dates for these documents need to be established. The budget appears appropriate for the proposed work.

Past Performance: High. Staff from state, federal, and tribal agencies have the expertise to successfully conduct this work.

Capacity Building: High. Much of the work is conducted by STA and they are the PI for this project. Approximately 57% of the FY01 budget is directly contracted to STA. Approximately \$58K or 29% of the budget is for local hire.

This project addresses an important sockeye salmon issue. The supplemental information addressed any technical concerns with the IP.

02-024

Declining East River Sockeye; Historical Review of Hydrologic and Fishery Data

Investigator(s): Yakutat Tlingit Tribe (*not sure if this is correct?!?!)*

FY2002 Budget: \$72,050.00

Total Budget (2 years): \$ 83,525.00

Geographic Area: Southeast

Information Type: HM/TEK

Issues:

Sockeye salmon returns to the East Alsek River have declined; the Hubbard Glacier has the potential to impound Russell Fjord. Impoundment of Russell Fjord would reduce salmon production from the Situk and other rivers that residents of Yakutat depend on to meet subsistence fishery needs. This project focuses on seven objectives to define reasons for production declines in the East Alsek. Results of this study may lead to further studies to restore production and/or in some way mitigate for reduced sockeye salmon productivity in the East Alsek.

Objectives:

- 1) Conduct literature search and review and develop annotated bibliography of all relevant physical, biological and historical information.
- 2) Compile, quantify and summarize Dry Bay area physical science information.
- 3) Compile, evaluate and archive existing information on zero-check sockeye.
- 4) Interview knowledgeable sources. Summarize interviews regarding: a) historical physical and biological change observed in the Dry Bay area, b) subsistence use and reporting accuracy, and, c) hypothesize cause for decline in East River sockeye stock.
- 5) Determine juvenile sockeye habitat use and residency within East River and lagoon rearing area.
- 6) Evaluate Yakutat area and East Alsek River salmon returns relative to similar systems in Alaska.
- 7) Survey Alsek River channel profile along reach associated with East River flood channel. Evaluate discharge at which flooding would occur and flood frequency based on Alsek River discharge record.
- 8) Develop testable hypotheses and recommendations for further study.

Methods:

The investigator will begin with a comprehensive search of gray and primary literature sources for physical, biological and historical information pertaining to the Dry bay area. Physical science data will be used to construct a conceptual model of ecological and geomorphic change for the Dry Bay area. GIS information will be made available by NPS under separate funding enabling documentation of spatial and temporal changes. Data from numerous sources will be used to develop electronic spreadsheets and databases with analyses effected in Tables and Figures. Information on zero-check sockeye will be acquired from gray and primary literature in addition to interviewing professional staff. A collaborative effort between YTT and NPS. YTT will select the anthropologist who will summarize and analyze results. This Objective will be coordinated with 2001 TEK projects to avoid duplication and to ensure a comprehensive achievement of this objective. Periodic sampling will be conducted in the lagoon area to assess distribution of juvenile sockeye. Three sampling stations will be established. Capture method will be roe-baited minnow traps. Temperature loggers will be installed at each site; local hires are expected to perform sampling. NPS will contribute on-site work at not cost to Project budget. Data pertaining to harvest, escapement, total return and return/spawner for East Alsek River and surrounding systems will be collated, analyzed and compared for similarities or differences to the East Alsek. USGS scientists will establish cross section transects upstream and downstream of the old East River Flood channel. Transit and stadia rod will establish relative elevations. Data will be used to estimate discharge magnitude necessary to flood the Old East River channel. Testable hypotheses will be developed as the project progresses. Hypotheses will probably be directed toward reduced production in the East Alsek due to reduced flow and increased aquatic vegetation. Recommendations for future research will be developed in like manner.

Deliverables/Products:

The investigator in collaboration with YTT, NPS, ADF&G and other agencies will produce an annual report summarizing work accomplished, data collected, data summarized and conclusions.

Experience of Investigator(s):

Interim investigators who prepared this investigation plan have close to 50 years combined experience working with Alaska fisheries and related issues. An Investigator will be sought pending approval by the TRC of this project. Investigator must be acceptable to YTT, FIS and NPS. Staff at Auke Bay have expressed interest in the project but are fully engaged and can not commit at this time.

Partnerships/Collaboration/Consultations:

Collaboration, dialog, information exchange and consultation has occurred with: NPS (Glacier Bay and Wrangell St. Elias), ADF&G, City and Borough of Yakutat, Yak-Tat Kwan, USFS. Collaboration etc. is ongoing. This project is supported by NPS, CBY, Yak-Tat Kwan, Alaska Native Brotherhood Local Camp #13, USFS, USGS and Dry Bay Set Netter's Assoc. Local residents will be apprised of opportunities for involvement/employment via agency/local interaction, advertisements and community meetings.

Justification:

This proposal would provide funding to coalesce existing biological and physical data regarding East River sockeye. This identical proposal was submitted for FY01 funding, but was not advanced for IP development. Some TEK work (01 091) regarding the East River was initiated in the FY01 program. At issue is a sockeye system that is unique in many respects, and for which there has been some unexplained decline in return. East River is unique in that there are no freshwater rearing waters and the sockeye are 0-check (i.e. juveniles migrate immediately to the ocean and do not spend additional winter(s) rearing in freshwater).

Strategic Priority: Moderate. This proposal addresses sockeye salmon, which is a high priority for information needs. East River supports some subsistence harvest; however, there is little in the way of credible estimates of harvest. The proposal speaks to most of the subsistence harvest consisting of “home pack” from commercial harvests. Poor returns have precluded any commercial harvest since 1999. Logistically, the East River is difficult to access for many federally qualified subsistence users. The importance of this system will increase if sockeye systems closer to Yakutat are impacted from glacial activity.

Technical Merit: Moderate. As proposed, this project would largely coalesce existing information for review; and then propose subsequent work in future fiscal years. The objectives speak to coalescing physical, biological, and historical information. Some onsite sampling would occur for juvenile utilization of the East River Lagoon; and also for a survey of the river channel profile. The objective for the juvenile sampling (*Determine juvenile sockeye habitat use...*) should be altered to a statistical objective (*Estimate the relative abundance of juvenile sockeye salmon... such that the estimates are within x% of the actual abundance y% of the time*) so that sampling intensity can be estimated and evaluated. In addition, some interviews would be conducted to obtain TEK regarding this system. The IP speaks to coordination of additional TEK information from this project and ongoing TEK projects to avoid duplication. Previous reviewer comments addressed the high cost of this project for the proposed work, and recommended that agency staff assume an investigator role to reduce cost. NPS staff have been identified as the PI; however, the IP still speaks to securing an alternate PI outside of the NPS.

Past Performance: Moderate. The investigators have the expertise to successfully conduct this work. However, some effort is still underway to secure an investigator outside of NPS.

Capacity Building: Low. Different from the proposal, much of the work is now to be conducted by NPS. YTT is an investigator; however, they are not directly contracted. There is little opportunity identified for local hire.

While additional work on East River sockeye is of value, there are other proposals of more pressing strategic importance and higher technical merit that should receive consideration for funding at this time. There is an ongoing TEK project for the East River; and it may be prudent to complete this project prior to initiating this proposed work. The question of another investigator should also be resolved prior to funding.

01-124

Prince of Wales (POW) Steelhead Snorkel Survey Evaluation

Investigator(s): Sport Fish Division, Alaska Department of Fish and Game**FY2002 Budget:** \$ 210,435.23**Total Budget (3 years):** \$ 518,039**Geographic Area:** Southeast**Information Type:** SST**Issues:**

Most steelhead streams in Southeast Alaska have only small populations of steelhead. The sport fishery is managed with region-wide harvest regulations of a 1-steelhead daily bag limit, 2-fish annual limit, and 36-inch minimum size limit. These conservative regulations result in minimal steelhead harvest in the sport fishery, and populations have rebounded from lows in the early 1990's as sport harvests have averaged less than 500 fish per year since 1994. There had been no recent harvest of steelhead under subsistence regulations, but there is now opportunity on Prince of Wales Island (POW) for harvest of steelhead under subsistence regulations. The annual trends in steelhead abundance in Southeast Alaska is currently being monitored by snorkel counts of steelhead in 11 streams in Southeast Alaska. This project would operate a weir to count the steelhead escapement into Harris River to validate an index of abundance determined by the snorkel surveys in that stream. Steelhead in Harris River are expected to be impacted by the new subsistence regulations. Multiple calibration snorkel surveys will be conducted each year by a snorkel team. Snorkel team counts will be calibrated against known numbers of steelhead upstream of each weir.

Objectives:

The objectives of this research for each year of the study (2002-2004) are to:

- 1) Count the escapement of steelhead into Harris River past a weir;
- 2) Count the number of steelhead once a week for a minimum of four weeks in established index sections of the Harris River using snorkel-dive surveys by trained observers;
- 3) Calculate the fraction of escapement observed in the peak snorkel survey;
- 4) Describe the length distribution of the steelhead escapement in the Harris River.

Methods:

An aluminum bipod weir with a center floating panel section (resistance board) will be constructed for placement near the mouth of Harris River (or other candidate stream) in March 2002 to count the escapement of steelhead. The weir will operate in the spring from 2002 to 2004 from mid-

March through late May to intercept all migrating steelhead. All steelhead passing through the weir will be sexed, measured for length, and have scales collected. The team of observers hired for this project will snorkel the Harris River at least four times during the steelhead run to calibrate team counts against a known number of steelhead upstream of the weir. Counting procedures are as in other Southeast Alaska studies.

Deliverables/Products:

Annual results will be published each year in a Sport Fish FDS report where results from all steelhead snorkel surveys in Southeast Alaska will be compiled. A three-year analysis of variability in snorkel surveys compared to weir counts as well as among snorkel teams and over time for different systems will be completed by early 2005.

Experience of Investigator(s):

The Trout Project in Sport Fish Division has conducted weir studies and snorkel survey projects since 1988. Results of those studies have been published in the Division of Sport Fish FDS report series.

Partnerships/Collaboration/Consultations:

Subsistence users in communities on Prince of Wales Island will be contacted to elicit their support, for suggestions on other potential candidate streams, and for hire as snorkel surveyors and weir crew. This project will be conducted by ADF&G in cooperation with the local communities and the U.S. Forest Service. Wherever possible, local residents will be hired and trained in snorkel techniques, sampling and to assist with other aspects of the projects. Local communities will be consulted on selection of appropriate stream systems for this project and will be advised of the results after the project concludes each year.

Justification:

This project would provide expanded monitoring of steelhead escapements on PWI. Specifically, steelhead in the Harris River would be assessed through a weir, and snorkel surveys conducted and validated against weir data. The SE Advisory Council recommended that funding for any trout proposals only be considered after funding for salmon work. However, there is a current regulatory issue regarding PWI; specifically, liberalization of bag limits and methods/means for federally qualified users on PWI. Interest is high in these small coastal systems, and abundance of individual stocks is likely quite low. An IP was developed for consideration in FY01; however, the regulatory proposal was not passed and other higher priorities were funded. An updated IP was submitted for consideration in FY02, which focuses on the Harris River. The updated IP is consistent with FY01 reviewer comments on the original proposal to validate survey methodology prior to sole reliance on those data.

Strategic Priority: Low. The SE Advisory Council has clearly identified trout assessment work as lower priority than salmon assessment work. Subsistence utilization of steelhead, in

comparison to salmon, is consistent with this recommendation. Steelhead, particularly small populations, are known to be able to sustain only minimal fishery exploitation. As such, current management strategy for directed steelhead fisheries are extremely restrictive in terms of harvest opportunity. The need for additional and relatively costly assessment is directly tied to harvest opportunity. Under current regulations, there is limited need for further assessment.

Technical Merit: High. Study design is sound and statistical objectives address management applications. Key parameters of abundance and composition are addressed and appropriate. Survey methodology appears adequately rigorous to make meaningful comparisons to weir data. Both annual and final reports are specified and adequate. The budget appears reasonable for the proposed work.

Past Performance: Excellent. The PI's have the technical and administrative expertise to successfully complete this project.

Capacity Building: Low. There is only limited opportunity to build local capacity. Consultations with local organizations are planned. No local organizations are directly contracted. State hiring practice is preference for local hire. Approximately \$110.3K or 54% of the budget is for local hire.

Under current management strategy and regulations, there are higher priorities for funding. This recommendation should be reconsidered if harvest opportunities are significantly liberalized. Consistent with staff recommendation and FSB action, regulatory proposals calling for greater harvest opportunities on small, coastal populations of steelhead should only be considered if there is commensurate stock status information.

02-018

Southern Southeast Alaska Eulachon Stock Assessment

Investigator(s): Alaska Department of Fish and Game; U.S. Forest Service

FY2002 Budget: \$ 36,733.76

Total Budget (3 years): \$ 114,631.00

Geographic Area: Southeast

Information Type: SST

Issues:

Investigators will collect biological information on eulachon stocks to assist fishery managers to better understand southern Southeast Alaska eulachon stocks.

Objectives:

- 1) Document the biomass and spawning locations of eulachon in the Bradfield, Chickamin, Klahini, Stikine and the Unuk Rivers.
- 2) Document harvest methods, effort levels, and timing by on-site observations. Collect biological samples.
- 3) Conduct age-weight-length (AWL) measurements along with sex analysis of collected samples for stock status.
- 4) Summarize historical information, yearly harvests, stock characteristics, social and economic impacts and documented fish activity in final project report. Other eulachon stocks in Alaska and the Pacific Northwest would be reviewed, along with an expanded collaboration with Canada on eulachon related research. Department personnel will travel to eulachon research council meetings to share and obtain new information.

Methods:

Investigators in Ketchikan and Petersburg will conduct aerial surveys of the Bradfield, Chickamin, Klahini, Stikine and Unuk Rivers to determine run timing and spawning locations of eulachon. Once eulachon have been located, investigators will travel to these rivers to document spawning locations, run timing, subsistence harvest, harvest methods and to collect biological samples. Samples will be studied to determine, age, weight, length, and sex ratios. Investigator will work with other eulachon researchers in the Pacific Northwest by sharing information to learn more about the stocks of eulachon. Investigators will work closely with historical users to determine social and economic impacts of this fishery.

Deliverables/Products:

Investigators will prepare an annual report that will include all data collected, a description of that data and accomplishments of the entire project. A final project report describing the fulfillment of project objectives will be completed at the end of the project.

Experience of Investigator(s):

Biologists with the Alaska Department of Fish and Game will run this project out of the Ketchikan and Petersburg management offices. Phil Doherty who will manage this project has over 20 years experience with these type of investigations. Scott Walker, who will oversee this project, has over 13 years of experience conducting surveys and stock assessment.

Partnerships/Collaboration/Consultations:

Investigators will work closely with local communities and historical users throughout the project. ADF&G will be working closely with the USFS during on site investigations and data summary.

Justification:

This proposal would provide funding to sample and assess selected eulachon (hooligan) systems through coalescing historic information; documentation of spawning biomass and subsistence harvest, and estimation of age-sex-size composition. At issue is poorly documented subsistence harvest, and poorly understood population dynamics of eulachon. The eulachon fishery was the subject of 3 recently submitted regulatory proposals.

Strategic Priority: Moderate. The SE Advisory Council has clearly identified sockeye and coho salmon work as the priorities for funding. However at their March 23 meeting where they updated their input on funding priorities; assessment of hooligan in southern southeast was also identified as a specific recommendation for study. Subsistence harvest is poorly documented, making it difficult to rationally evaluate the relative importance of this work. Clearly, there is a regulatory issue with eulachon and obtaining estimates of abundance, and ultimately sustainable yield, would be of value to that process.

Technical Merit: Low. Key parameters of abundance, harvest, and composition are all addressed. However, these are difficult parameters to estimate. As such, it is proposed in the IP to “document” biomass, spawning locations, and fishery parameters. It is not clear as to the degree to which this information would be useful to the regulatory process. Statistical objectives are not provided; making it difficult to the adequacy of sampling and application to management. Subsistence harvest is described as sporadic, making meaningful on-site fishery surveys problematic. Additionally, age-sex-size will be estimated by collection of 5 100-fish samples randomly collected from each run. It does not appear that this sampling design could test for temporal variation; and systematic sampling should be conducted as originally presented

in the project proposal. Both annual and final reports are specified and adequate. The budget appears reasonable for the proposed work.

Past Performance: High. The identified state and federal agencies clearly have the expertise to successfully conduct this work.

Capacity Building: Low. There is only limited opportunity to build local capacity. Subsistence harvesters will likely be involved in sample collection. No rural organizations are directly contracted, nor is any local hire identified.

This is difficult work and the likelihood of success is unknown. With limited funding, salmon have been identified as a higher priority. It may be prudent to finalize eulachon research in Cook Inlet, and then conduct a review of SE eulachon assessment to develop a more comprehensive study plan.

Southeast Alaska
Harvest Monitoring and TEK Projects

02-013

Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations

Investigator(s): Elizabeth Andrews & Charles Utermohle; Division of Subsistence, Alaska
Department of Fish and Game

FY2002 Budget: \$ 30,600.00

Total Budget (1 year): \$ 30,600.00

Geographic Area: Southeast

Information Type: HM/TEK

Issues:

The proposed project will compile a chronological history of subsistence salmon fishing regulations in Southeast Alaska since 1957. The information for each year and management district will be entered into a computerized database for easy retrieval and analysis and will interface with the subsistence salmon harvest database. It will show changes in fishing gear, fishing times, and methods and means regulations. The regulation history will provide a context for evaluating and considering management plans and regulatory proposals, but also will show external influences on the conduct of subsistence salmon fisheries in Southeast Alaska. The study will use a research method that includes archival research of regulations and subsistence fishing studies. This project will build upon FIS 01-010; a similar project conducted for the Yukon and Kuskokwim River salmon fisheries.

Objectives:

- 1) To compile a chronological history of subsistence salmon fishing regulations since 1957 by fishing districts within and adjacent to federal conservation units in the Southeast Alaska Region in terms of gear; fishing times; and methods and means.
- 2) To provide an overview of recent subsistence salmon fishing patterns in each management area in terms of customary fishing times and gear, as derived from subsistence fishing studies. The purpose of this objective is to provide a qualitative description of the general subsistence fishing patterns in an area.

Methods:

This project will use archival research methods for examining published regulations on file at the State of Alaska, Legislative Reference Library, for each study area and year specified. Information will be entered into a computerized database for easy retrieval and analysis. It will interface with the fisheries harvest database. Alaska Department of Fish and Game annual

management reports will be reviewed to determine inseason management actions that may vary from published regulations when prompted by conservation concerns. These will be documented to the extent that they influenced the ongoing nature of the subsistence fisheries and subsistence fishing opportunity.

Deliverables/Products:

A hardcopy report will be prepared showing the chronological history of subsistence salmon fishing regulations for each of the two management areas in Southeast Alaska Yakutat and Southeast for gear; fishing times; and methods and means within or adjacent to federal conservation units. A computer searchable database on CD-ROM will also be provided.

Experience of Investigator(s):

The principal investigators have conducted subsistence fishing research in Alaska as senior research staff of the Division of Subsistence since the 1980s. Elizabeth Andrews has documented regulatory salmon fishing histories of two Alaska Native groups as part of comprehensive studies of subsistence uses and fishing and hunting patterns in Native communities. She has also prepared regulatory histories of salmon fishing to address issues raised by local fish and game advisory committees seeking regulation changes to provide for subsistence fishing opportunity. Charles Utermohle has extensive experience preparing subsistence salmon harvest databases including those prepared under contract with the federal subsistence program. He developed the Community Profile Database of subsistence fish and wildlife harvests that is the major database on subsistence harvests of Alaska communities.

Partnerships/Collaboration/Consultations:

Contact has been or will be made by telephone with officials of the Southeast Alaska Native Subsistence Commission (SENSC) and the U.S. Forest Service Subsistence Program. The project will be coordinated with the SENSC to avoid duplication in research and to provide information to complement their regulation review project. The proposed project differs from the SENSC project in that this project is a regulatory history that will document regulatory changes over time. Contact will occur during the project with regional fisheries and Native organizations, as well as ADF&G area fisheries managers to understand the broader context in which subsistence fisheries management occurs in the subject region. ADF&G will develop an appropriate, searchable database that can be updated annually for the type of information collected in this

Justification:

This project compiles a chronological history of subsistence salmon fishing regulations since 1957 in Southeast Alaska Region federally administered units. The specific categories studied will be gear, fishing times, and methods and means. The project proposes to provide a qualitative description of the general subsistence fishing patterns in the area. This project uses existing library and archival data. Consultations with the appropriate federal and other entities have been carried out. While no partnering, per se, is proposed, this project builds capacity in that it will

make available data for management to local and regional land managing agencies and planners. Results of the project will be readily available to all. The proposal addresses the nature of the subsistence fisheries and subsistence fishing opportunity in general. It does not specifically target salmon, the top priority provided by the SRAC at a recent meeting. This proposal mirrors others in other regions. Objectives are clear, achievable, and methods technically sound. The budget is within appropriate limits. Products are acceptable. Both proposers have a long, successful track record in similar projects.

This project is duplicative of an existing project currently being conducted by the Tlingit-Haida Council. This work is scheduled for completion in fall, 2001 and results should be examined to determine whether further work is necessary.

02-038

Southeast Alaska Subsistence Fisheries GIS Database

Investigator(s): Central Council of the Tlingit and Haida Indian Tribes of Alaska; Division of Subsistence, Alaska Department of Fish and Game; Third Sector Technologies

FY2002 Budget: \$ 40,000.00

Total Budget (2 years): \$ 80,000.00

Geographic Area: Southcentral

Information Type: HM/TEK

Issues:

The investigators will use subsistence fisheries harvest information to update the Southeast Alaska Subsistence Fisheries GIS Database developed in 2000 and 2001 (FIS 00-039 and FIS 01-103). The GIS developed over the past two years has made subsistence harvest information accessible in a visual, geographic framework, available on CD-ROM. Program advances have increased the functionality and usability of the GIS, and new database construction has made subsistence harvest reporting more locally centralized. This year's proposal seeks to update the database and establish an on-line data reporting system for local resource managers. Improvements in the GIS include developments in its functionality through programming dialogue boxes, menus, radio buttons, etc. to make data more accessible for the user.

Objectives:

- 1) Update the linkages between ADF&G standard coverages (digital maps) to harvest information contained in the Alexander database.
- 2) Depict harvest information in a set of scalable maps.
- 3) Design and implement a web-based database for local resource managers to record, store, and analyze harvest data, and prepare the database for integration with the GIS.
- 4) Conduct a technological assessment of the hardware, communications and training needs of Southeast villages.
- 5) Train CCTHITA and local resource program staff to enter, compile, and analyze harvest data.
- 6) Create search and query options, tools and menu options, within the GIS for increased functionality and data access.
- 7) Launch the GIS on the World Wide Web for greater public access.

Methods:

Investigators will set up a secure, integrated web and database application and provide the technical assistance to facilitate remote data collection and analysis. The database

will be linked to the GIS software, Arc View 8.1, to create a set of scalable maps that will depict subsistence harvests by community and by water body, with different graphic characteristics illustrating specific variables (quantity of salmon, number of permits, percent of households using an area, etc.). As an improvement to the functionality of the existing GIS, the investigators will design dialogue boxes and program database access tools to assist GIS users in defining selection criteria, which will then produce thematic maps containing the relevant information. Tables and charts depicting the harvest information will also be linked to the geographic features on the maps. The GIS will be designed and made available for public use on CD-ROM and as an Internet application.

Deliverables/Products:

The Alaska Department of Fish and Game, Division of Subsistence will produce a CD-ROM of the completed project, containing a number of scalable maps with geographic features linked to the subsistence fisheries harvest information found in the Alexander Database, Division of Commercial Fisheries. The CD-ROM will be delivered to, and demonstrated for, the Office of Subsistence Management, Fisheries Information Services Division, and training in the use of the GIS will be made available. Southeast communities and the Southeast Regional Advisory Council will also receive a demonstration of the project. The internet-based application will also be demonstrated and made available to the public.

Experience of Investigator(s):

Gordon Jackson, Manager of the Business & Economic Development Division of CCTHITA, has over thirty years of management experience with state and regional organizations, including large-scale, multi-million dollar fisheries and timber projects.

Brian Davis has over 6 years experience working with rural Alaska communities on natural resources and subsistence research projects, more than 2 years of which has been with the Alaska Department of Fish and Game Division of Subsistence. Mr. Davis has completed several GIS projects for the Division, including the atlas of harbor seal harvest maps (Davis 1999), community harvest use area maps for about 10 Alaska communities. He has also successfully overseen the first year of the Southeast Alaska Subsistence Fisheries GIS Database project (FIS 00-039) and received funding for expansion of that GIS during the present fiscal year (FIS 01-103).

Carone Sturm Doug Toelle, and Peter Kriskeller of Third Sector Technologies, provide communication technology consultation services to the University of Alaska Fairbanks, Tanana Chiefs, and several Alaska interior Native organizations and communities. They provide programming

services and training for web-based applications.

Partnerships/Collaboration/Consultations:

This project would bring together in a working relationship the ADF&G Subsistence Division, the Central Council of Tlingit and Haida Indian Tribes of Alaska, and representatives of the tribal governments and the municipalities of Southeast Alaska communities. Coordination will be required with the funding federal agency, thus the project, in addition to creating local capacity, will develop a partnership among federal, tribal, state and municipal entities.

Justification:

This project follows on projects in FY 2000 and 2001 to develop a SE GIS database. During the past 1 ½ years, this ongoing project has produced a product that has integrated the commercial fishery division's data on subsistence into a GIS portable project for use with arc view that can be queried by place (has a map interface). During the second year, the project has been updated and GIS improvements have been made. The third (and final) year will not be duplicative, but will create new data collection protocols, by updating the existing GIS database, and further developing the functionality of the interactive GIS format, including launching an on-line Southeast Alaska subsistence GIS. This project proposes to work on a new way to collect subsistence data. The project proposes to provide for local monitoring of inseason and post-season data collection. The data will be uploaded on a web-accessible database, integrated into GIS. The proposers wish to make improvements to the program and launch it on the internet. Goals include comparing and describing shifts in communities' subsistence salmon fishing, and assessing current fishery trends by looking at the relationship between subsistence users, observed abundance, location of effort, and issues of competition. There is provision to train CCTHITA and local resource program staff to enter, compile, and analyze harvest data.

This is an important project to initiate in FY2002. Because of funding limitations, full funding for this and other high priority projects may not be possible. To initiate the maximum amount of work under available FY2002 funding, 1-year projects that could feasibly be conducted over two years were identified. It appears that this project could be reduced in scope during FY2002, and then completed during FY2003. This strategy provides less funding per project in FY2002, but allows the remaining work to be completed the following year, as well as providing the balance of the original project cost. This project could be conducted in this manner and it is recommended that \$40,000 be funded in FY2002, with the balance of \$40,700 in FY2003. This modified strategy was reviewed with the investigator and found to be feasible to successfully implement this project.

02-049

Wrangell Subsistence Salmon Harvest Use Pattern

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game; Wrangell Cooperative Association

FY2002 Budget: \$ 20,994.74

Total Budget (2 years): \$ 64,667.00

Geographic Area: Southeast

Information Type: HM/TEK

Issues:

The project proposes to describe Wrangell's historic and contemporary subsistence sockeye salmon harvests on the Stikine River, at Thom's Creek, Virginia Lake (Mill Creek), and Salmon Bay.

Objectives:

- 1) A description of historic methods of harvesting non-commercial salmon in Southeast Alaska.
- 2) A description of the historic methods of harvesting non-commercial salmon on the Stikine River, at Thom's Creek, Virginia Lake (Mill Creek), and Salmon Bay.
- 3) A description of the contemporary methods of harvesting non-commercial salmon on the Stikine River, at Thom's Creek, Virginia Lake (Mill Creek), and Salmon Bay.
- 4) A written report using previously published reports, technical papers, and documents, along with the collection of traditional ecological knowledge through interviews with key respondents and a report from field observations will be included in the project.

Methods:

The project will be undertaken as a cooperative project between Wrangell Cooperative Association and the Alaska Department of Fish and Game, Division of Subsistence. Wrangell Cooperative Association staff, with assistance from Division of Subsistence staff, will be responsible for key respondent interviews and participatory observations of subsistence fisheries. Division of Subsistence staff will be responsible for review of previously published reports, technical papers, and documents concerning historic methods of harvesting non-commercial salmon in Southeast Alaska. Division of Subsistence staff and Wrangell Cooperative Association staff will work cooperatively on the review of previously published reports, technical papers, court records and documents concerning historic subsistence sockeye salmon harvests on the Stikine River, at Thom's Creek, Virginia Lake (Mill Creek), and Salmon Bay. Division of Subsistence staff will train Wrangell Cooperative Association staff in professional social science techniques of participant observations and key respondent interview techniques. Division of

Subsistence staff and Wrangell Cooperative Association staff will work cooperatively on the final report, which will summarize and analyze the subjects addressed by the research.

Deliverables/Products:

The Division of Subsistence, in collaboration with the Wrangell Cooperative Association will produce a Final Project Report (in textual and electronic formats). The final written report will describe the village of Wrangell's historic and contemporary subsistence sockeye salmon harvests on the Stikine River, at Thom's Creek, Virginia Lake (Mill Creek), and Salmon Bay. Computer-accessible text files of key respondent interviews will be produced using the AskSam software program. The final report will be delivered to the Office of Subsistence Management, Fisheries Information Services Division.

Experience of Investigator(s):

The Division of Subsistence has conducted socio-cultural research and subsistence harvest assessments in Wrangell since the early 1980s. The principle investigator has over 6 years experience working with Southeast Alaska tribes and rural communities on subsistence research. The Wrangell Cooperative Association is a tribal government with experience in administering programs and undertaking heritage studies and subsistence resource inventories. The Wrangell Cooperative Association has worked with the Subsistence Division on a number of harvest surveys and other research projects. In 2000 the division conducted household harvest surveys in Wrangell in cooperation with the Wrangell Cooperative Association.

Partnerships/Collaboration/Consultations:

The project will build on the existing relationship between the Wrangell Cooperative Association and the Subsistence Division. The Wrangell Cooperative Association has significant interest and involvement in subsistence resource management and cultural resource management. The project will build on the Wrangell Cooperative Association's existing capacity, providing opportunities to develop resource staff through participation from conception through completion of the final report. Experience from this project will assist the Wrangell Cooperative Association in undertaking subsistence studies in the future.

Justification:

The project proposes to provide a descriptive analysis of Wrangell's historic and contemporary subsistence salmon harvests of the Stikine River, Thom's Creek, Virginia Lake, and Salmon Bay. The one-year project will utilize archival materials and gray literature, as well as key respondent interviews and field observations. The project proposes to assess long-term changes in salmon stocks in the named drainages, assess potential effects of proposed regulatory changes to the subsistence fishery, and assess current trends looking at subsistence users, fish abundance, use sites and competition among users. This project addresses a subject of local concern and will provide data needed for management of an important subsistence resource. TEK has been identified by the Southeast SRAC as its top priority for FIS studies. Study objectives are clear

and achievable, the study is appropriately designed, and methods and analysis procedures are acceptable. Products identified will be useful. The budget is within appropriate limits for what is being proposed. The proposer has an established track record, and the technical and administrative expertise to carry the project to successful completion. There is good tie-in with other work currently being carried out in the area, and with 02 048. Appropriate consultations have been carried out, and there will be local hiring in order to build local capacity for similar projects. A local organization is a co-P.I. on the project.

This is an important project to initiate in FY2002. Because of funding limitations, full funding for this and other high priority projects may not be possible. To initiate the maximum amount of work under available FY2002 funding, 1-year projects that could feasibly be conducted over two years were identified. It appears that this project could be reduced in scope during FY2002, and then completed during FY2003. This strategy provides less funding per project in FY2002, but allows the remaining work to be completed the following year, as well as providing the balance of the original project cost. This project could be conducted in this manner and it is recommended that \$21,000 be funded in FY2002, with the balance of \$43,700 in FY2003. This modified strategy was reviewed with the investigator and found to be feasible to successfully implement this project.

02-104

Hoonah and Klawock Salmon Survey

Investigator(s): Central Council of Tlingit and Haida Indian Tribes of Alaska

FY2002 Budget: \$ 79,936.00

Total Budget (2 years): \$ 105,000.00

Geographic Area: Southeast

Information Type: HM/TEK

Issues:

The variation between local knowledge of the various salmon species present in streams used for subsistence purposes compared to documentation by state and federal biologists. Identify the differences in traditional harvest techniques between the villages of Hoonah and Klawock. Display the relative influence of elders in regulating and limiting salmon harvest.

Objectives:

- 1) Record the traditional knowledge regarding salmon population diversity and distribution within anadromous streams, compared to that of state and federal regulatory agencies.
- 2) Determine the influence of village elders in regulating subsistence fisheries.
- 3) Develop the interview protocol and methodology for collecting data.
- 4) Hire younger (non-elder) Tlingit speakers, providing a financial incentive for fluency with the language.
- 5) A descriptive analysis of Hoonah's and Klawock's historic and contemporary subsistence salmon harvests.

Methods:

The investigators will collaborate to develop the protocols and methodology for collecting data. Prof. Stephen Langdon will be responsible for the anthropological data, while Mike Turek of the Division of Subsistence will be responsible for maintaining the consistency of the Division of Subsistence survey protocols. Residents of Hoonah and Klawock, knowledgeable in the Tlingit language and customs will be trained as local surveyors.

Deliverables/Products:

A professionally designed and published report that will include a narrative description of the project with photographs and illustrations, a comparison of the historic and contemporary subsistence salmon harvests in Klawock and Hoonah.

Experience of Investigator(s):

Gordon L. Jackson, Manager, Business & Economic Development Department of the Central Council of Tlingit & Haida Indian Tribes of Alaska. University of Alaska, Fairbanks - Bachelors Degree in Education. Formerly: CEO/President and Chairman of the Board, Kake Tribal Corporation. Has managed numerous, multi-million dollar projects, including fisheries and timber businesses that have employed hundreds of people.

Stephen Langdon, one of the most active and respected cultural anthropologists in the country, is consulting with CCTHITA in this project. Langdon brings to the project Ken Austin, a Native of Hoonah, who is an expert speaker and writer of Tlingit. Together, they will train Natives in Hoonah and Klawock in interview protocol and proper documentation techniques. Staff from the Division of Subsistence have consulted with staff from the Hoonah Indian Association, and the U.S. Forest Service. In 1998 the division conducted household harvest surveys in Hoonah in cooperation with the Hoonah Indian Association.

The Division of Subsistence has also been working closely with the village of Hoonah for 9 years conducting harbor seal hunter surveys.

Partnerships/Collaboration/Consultations:

The Central Council of Tlingit and Haida Indian Tribes of Alaska (CCTHITA) will work hand in hand with the Alaska Department of Fish & Game, Subsistence Division, with guidance by Professor Stephen Langdon, and with the aid of local elders and cultural leaders, to determine the variation between local knowledge and that of state and federal biologists. This project encourages local involvement by training and employing Tlingit speakers and those knowledgeable in Native culture to interview local subsistence users to document traditional ecological knowledge of subsistence salmon fisheries.

Justification:

This project will record the traditional ecological knowledge of Hoonah and Klawok Elders and other subsistence users regarding population diversity and distribution within local streams, and compare it with that of state and federal regulatory agencies. It will study the influence that village Elders have in regulating subsistence fisheries, will develop an interview protocol and methods for collecting TEK data, and will hire young Tlingit speakers to assist with the project. The project combines the best of this proposal and proposal 02 048, and the two proposers are now collaborating under this project 02-104. Principal Investigator Steve Langdon has a good track record and has been involved in Alaskan applied anthropological issues for many years. He is partnering with Co-Investigators Gordon Jackson, Tlingit-Haida Council; Ken Austin, an anthropology student, native Tlingit speaker and resident of Hoonah; and Michael Turek, Alaska Department of Fish and Game, Division of Subsistence. The proposal addresses a federal subsistence fishery. TEK is listed first on the Southeast SRAC's list of funding priorities, particularly as it pertains to salmon. The proposal addresses a concern about cultural differences with respect to western science and local knowledge. It focuses on an important subsistence

resource, and on a local concern for this resource. Study objectives are clear and achievable, and methods are technically sound. Analysis procedures are appropriate to the study, and deliverables are acceptable. All three proposers have long track records and ample technical and administrative expertise to carry out the project. Local communities are directly involved. Participating Elders will be paid as well as the younger assistants.

This is an important project to initiate in FY2002. Because of funding limitations, full funding for this and other high priority projects may not be possible. To initiate the maximum amount of work under available FY2002 funding, 1-year projects that could feasibly be conducted over two years were identified. It appears that this project could be reduced in scope during FY2002, and then completed during FY2003. This strategy provides less funding per project in FY2002, but allows the remaining work to be completed the following year, as well as providing the balance of the original project cost. This project could be conducted in this manner and it is recommended that \$80,000 be funded in FY2002, with the balance of \$25,000 in FY2003. This modified strategy was reviewed with the investigator and found to be feasible to successfully implement this project.

INTER-REGIONAL OVERVIEW

Issues and Information Needs

- A number of Regional Advisory Councils have identified issues and information needs that apply to more than one region or have statewide application. There is continued interest in:
 - Organization of existing, as well as new, fisheries information in a way that can be easily located and obtained by Tribal, State and Federal interests;
 - Development of consistent methods for subsistence harvest monitoring and conducting Traditional Ecological Knowledge studies;
 - Improvement of methods used to set salmon spawning goals and sustain subsistence harvests;
 - Expanded communication and coordination among regions to better achieve resource stewardship and more effectively deploy program funds through coordinated planning.
- The Federal Subsistence Board decided it would not fund studies dealing with hatchery propagation, restoration, enhancement, and supplementation; habitat protection, restoration, and enhancement; or contaminant assessment, evaluation, and monitoring.
- Regulatory issues can also be used to identify issues and information needs. Two statewide regulatory proposals were submitted in 2002. One seeks changes to existing subsistence fisheries practices, while the other seeks to establish a new Federal subsistence permit for marine fishes.

Studies Forwarded for Investigation Plans

- The Technical Review Committee advanced a total of five studies for Investigation Plan development. A total of \$178.1 thousand would be needed to fund these studies in fiscal year 2002, while only \$105.0 thousand is available (**Tables 1, 2, and 3**).
- In making funding recommendations, the Technical Review Committee considered strategic needs for the information, technical merits of the study, performance ability of investigators, and contributions to local partnership and capacity building.

Recommendation Process—Stock Status and Trends Studies

- Three studies were advanced for Investigation Plan development in the Stock Status and Trends category (**Table 1**). Each of these studies addresses a different general issue: Subsistence Fishery Management Practices, Fishery Information Access, and Catch-And-Release Fish Mortality.

Table 1. Proposed recommendation of 2002 Inter-Regional stock status and trends investigation plans for funding consideration. Proposed recommendations are shown with bold type, and noted with "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-025	Development of General Method for Calculation of Sustainable Subsistence Harvest	Yes	\$45.7	\$74.7	\$48.4
02-069	Develop Shared AYK Fishery Database	Yes ^a	\$31.9		
02-071	Strategy for Assessing Release Mortality of Sport-Caught Fish in Western and Interior Alaska	No	\$59.0	\$187.2	
GRAND TOTALS			\$136.6	\$261.9	\$48.4
TARGET BUDGET LEVELS			\$70.0	\$159.7	\$159.7
PROPOSED SELECTIONS			\$77.6	\$74.7	\$48.4

^a This proposal reached the investigation plan stage in 2001 as study 01-016. Modifications in 2002 greatly lowered cost.

Table 2. Proposed recommendation of FY 200 Inter-Regional harvest monitoring and Traditional Ecological Knowledge investigation plans for funding consideration. Proposed recommendations are shown with bold type, and noted with "Yes" in the "Recommendation" column.

FIS #	Title	Recommendation	Requested Budget		
			2002	2003	2004
02-043	Alaska Subsistence Fisheries Database GIS Integration	Yes	\$27.5		
02-047	Alaska Subsistence Salmon Harvest Timing (Phase 1): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	No	\$14.0	\$14.5	
GRAND TOTALS			\$41.5	\$14.5	\$0.0
TARGET BUDGET LEVELS			\$35.0	\$0.7	\$79.9
PROPOSED SELECTIONS			\$27.5	\$0.0	\$0.0

Table 3.

FY 2002 Inter Regional Projects

Region	7. Inter regional					
Type	A . Stock Status & Trends					
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-025	UAF, UW	Development of general method for calculation of sustainable subsistence harvest	\$45,741.00	\$0.00	\$0.00	\$45,741.00
02-069	ADFG-CFD	Develop Shared Fishery Database	\$0.00	\$0.00	\$31,900.00	\$31,900.00
02-071	ADFG-SFD, USFS	Assessment of Scientific Studies Relating to the Practice of Catch-and-Release Fishing in Western and Interior Alaska	\$0.00	\$0.00	\$59,000.00	\$59,000.00
Total			\$45,741.00	\$0.00	\$90,900.00	\$136,641.00
Type	B. Harvest Monitoring/TEK					
Doc #	Agency/Org	Title	NGO \$	Fed\$	State \$	Total \$
02-043	ADFG-SD	Alaska Subsistence Fisheries Database GIS Integration	\$0.00	\$0.00	\$27,525.00	\$27,525.00
02-047	ADFG	Alaska Subsistence Salmon Harvest Timing (Phase I): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	\$0.00	\$0.00	\$13,991.29	\$13,991.29
Total			\$0.00	\$0.00	\$41,516.29	\$41,516.29
Grand Total			\$45,741.00	\$0.00	\$132,416.29	\$178,157.29

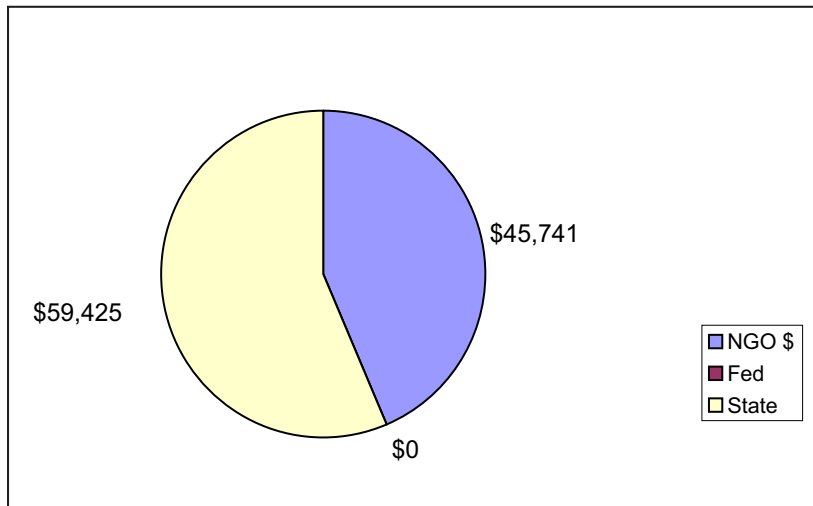
- Funding requested for the three stock status and trends studies advanced for investigation plans totaled approximately \$136.6 thousand for fiscal year 2002, while a total of \$70.0 thousand is available.
- The Technical Review Committee recommended funding for two studies in fiscal year 2002 (**Table 1**). Total cost for these projects in fiscal year 2002 is anticipated to be about \$77.6 thousand, which is about 10% more than the target budget level.
- Although the Technical Review Committee had asked for a proposal to form a working group to examine catch-and-release mortality of fishes, they did not recommend the submitted study be funded. This decision was based on budget limitations and the greater perceived strategic importance of two other studies. One would seek to change existing methods used to set salmon spawning goals and sustain subsistence harvests, while the other would complete database work begun in fiscal year 2000 for the Arctic, Yukon, and Kuskokwim regions.

Recommendation Process – Harvest Monitoring and Traditional Ecological Knowledge Studies

- Two studies were advanced for Investigation Plan development in the Harvest Monitoring and Traditional Ecological Knowledge categories (**Table 2**). Both of these address the issue of Harvest Information Access.
- The Technical Review Committee recommended funding for one study in fiscal year 2002 (**Table 2**). Total cost of this project in fiscal year 2002 is anticipated to be about \$27.5 thousand, which is about 21% less than the target budget level.
- Both studies had technical merit, would be done by experienced investigators, and would contribute to capacity building. However, the recommended study, which would integrate two existing statewide databases into a single Geographic Information System to enhance availability and use, was thought to have greater strategic importance than the other study, which would make subsistence harvest timing information easier to access and use.

Funding Recommendation Summary

- Three studies, two Stock Status and Trends studies and one Harvest Monitoring/Traditional Ecological Knowledge study, were recommended for funding with a cost of \$104.0 thousand in fiscal year 2002 (**Tables 1, 2, and 3**).
- All funding for these three studies would go to non-government organizations and State agencies (**Chart 1**).
- About 11% of the funds for these three studies (\$12.0 thousand) would be used for local hire, while investigators would contribute \$28.0 thousand in matching funds (**Table 4**).

Chart 1. 2002 Inter-regional funding distribution**Table 4.**

2002 Local Hire and Matched Funds Report Inter Regional

Region 7. Inter regional

Type A . Stock Status & Trends

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-025	UAF, UW	Development of general method for calculation of sustainable subsistence harvest	\$0.00	\$0.00
02-069	ADFG-CFD	Develop Shared Fishery Database	\$12,000.00	\$28,000.00
02-071	ADFG-SFD, USFS	Assessment of Scientific Studies Relating to the Practice of Catch-and-Release Fishing in Western and Interior Alaska	\$0.00	\$0.00
Total			\$12,000.00	\$28,000.00

Type B. Harvest Monitoring/TEK

Doc #	Agency/Org	Title	Local Hire \$	Matched \$
02-043	ADFG-SD	Alaska Subsistence Fisheries Database GIS Integration	\$0.00	\$0.00
02-047	ADFG	Alaska Subsistence Salmon Harvest Timing (Phase I): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage	\$0.00	\$6,000.00
Total			\$0.00	\$6,000.00
Grand Total			\$12,000.00	\$34,000.00

- Investigation plans not selected for funding this year will not automatically become eligible for funding consideration next fiscal year. Investigators need to submit new proposals requests to fund this work in fiscal year 2003.

Study Recommendations, Descriptions, and Justifications

- Additional details about each project can be found in the sections that follow. For each project, we have included the Technical Review Committee recommendation, a project description, and the technical justification for the recommendation.
- Study information is organized into two sections. The first contains Stock Status and Trends studies information, while the second contains Harvest Monitoring and Traditional Ecological Knowledge studies information. Within each section, studies are organized by their assigned numbers, in increasing order.

Inter-Regional Overview Stock Status and Trends Projects

02-025

Development of General Method for Calculation of Sustainable Subsistence Harvest

Investigator(s): University of Washington, School of Aquatic and Fishery Sciences; University of Alaska Fairbanks, Juneau Center, School of Fisheries and Ocean Sciences; Alaska Department of Fish and Game, Division of Commercial Fisheries

FY2002 Budget: \$45,741.00

Total Budget (3 years): \$168,910.00

Geographic Area: Inter-Regional

Information Type: Stock Status and Trends

Issues:

A key question in management of all subsistence fisheries in Alaska is determining the level of sustainable subsistence harvesting. This project will develop a new paradigm and algorithm for calculation of sustainable levels of subsistence harvesting in the form of a protocol and computer program for analyzing available data on a salmon stock and evaluating the long term consequences of different harvest policies.

Objectives:

- 1) Develop a format for definition of subsistence fishery management objectives.
- 2) Use defined objectives to analyze utility functions for different levels of catch and different inter-annual variation in catches for defined subsistence user groups.
- 3) Develop computer software to evaluate alternative management policies.
- 4) Use a decision-analysis framework to analyze objectives, including evaluation of uncertainty.
- 5) Develop a protocol for using the computer software, consisting of a users manual, worked examples, and a web-based power-point demonstration of how to use the software and interpret results.

Methods:

The three major innovative components of the protocol to be developed would be (1) describing salmon population dynamics using ecosystem oriented models that move beyond fitting stock and recruitment data to Ricker models, (2) evaluating harvest policies that maximize objectives other than long-term maximum yield, and (3) using formal methods of statistical decision-analysis to incorporate uncertainty into the evaluation of consequences. Salmon population models would include components to simulate (1) dynamics of populations at low abundance densities, (2)

errors in estimating spawning stock and recruitment, (3) effects of marine derived nutrients in freshwater systems on salmon production, (4) effects of sub-stock structure within the “stock” being managed, (5) forms of compensatory mortality other than Ricker model type, (6) implementation error associated with estimating run size and catch in a year, and (7) effects of oceanic regime shifts on salmon production. The computer program developed would be written using AD Model Builder software (Otter Software, Nanaimo B.C.), and the user interface would be programmed in EXCEL to provide a user-friendly format for data entry and output. Workshops and meetings would be scheduled during the project to gather and disseminate information among agencies and organizations.

Deliverables/Products:

The final product of this project would be a computer software package and protocol that should greatly enhance the ability of fisheries management agencies and organizations to evaluate alternative subsistence harvesting regimes. Reports would also be written at the end of each work year to describe methods, data, results and accomplishments, as well as any proposed changes in design or methods. These reports would be produced in both paper and electronic format, and provided to the Office of Subsistence Management as well as the Alaska Resources Library Information System (ARLIS).

Experience of Investigator(s):

The investigators from University of Washington and University of Alaska have extensive experience in all aspects of this project and have been leaders in salmon research, particularly in the area of quantitative stock assessment. They have worked closely with management agencies and various user groups to evaluate salmon spawning goals and management policies, and have held workshops on various fishery topics for both professional and lay audiences.

The investigator from Alaska Department of Fish and Game has worked extensively on applied salmon research and management topics, including scientific evaluation of harvest policies.

Partnerships/Collaboration/Consultation:

While the software developed by this project would primarily be used for analyses conducted by professional biologists working for agencies or regional groups, subsistence user groups would have a key role in developing subsistence fishery management objectives and evaluating resulting products. Consultations have already taken place with Bristol Bay Science Center, Aleutians East Borough, Chignik Regional Aquaculture Association, and Alaska Department of Fish and Game. Further consultations would occur with other regional organizations and Federal fishery management agencies.

Justification:

The overall concept for this work has merit, and new methods for establishing salmon escape-ment goals and subsistence harvest strategies would benefit both management agencies and

subsistence users. The investigators propose to develop methods and software to estimate sustainable subsistence salmon harvests. Methods currently being used are based on achieving maximum sustained yield, which is not a suitable management goal for management of subsistence fisheries, and on empirical models, which do not incorporate uncertainty. The technical approach proposed to develop this methodology is excellent. Two modifications are needed improve the usefulness of this work to Federal subsistence fishery program. First, the focus of proposed efforts was directed primarily at sockeye salmon and State-managed subsistence fisheries. This project needs to be broadened to include other salmon species and to focus on Federally managed, rather than State managed, subsistence fisheries. The most difficult Federal subsistence management issues currently exist for chinook and chum salmon runs to the Yukon and Kuskokwim Rivers. Therefore, at least one of these species in one of these systems should be used as a test case for model development and evaluation. Second, a staff member from a Federal fishery management agency needs to be added as a partner to serve a function analogous to that served by the State management agency partner. This would help ensure acceptance of this tool by both state and Federal fishery management agencies.

The investigators and their organizations or agencies have both the administrative and technical expertise to conduct this work. At least one of the investigators also has a great deal of experience conducting effective workshops with both professional fishery biologists and resource users on various stock assessment procedures and fisheries problems.

Partnership and capacity building aspects of this proposed study, while improved from that described in the original proposal, still require further refinement and development. The Investigators have selected an issue with widespread interest among Federal subsistence users and management agencies, but need to ensure that meaningful participation and information exchange occurs with local communities and residents, and that local support exists for the proposed study. No letters of support for this work were received from local organizations, and consultations with these organizations have been too limited. While technical reviewers and fishery managers generally see a benefit from conducting the proposed work, Regional Advisory Council members and Federal subsistence users may not understand or agree with this approach. Therefore, investigators may need to put more effort into explaining the need for this work and its products to this audience.

02-069

Develop Shared Fishery Database

Investigator(s): Division of Commercial Fisheries, Alaska Department of Fish and Game**FY2002 Budget:** \$ 31,900.00**Total Budget (1 year):** \$ 31,900.00**Geographic Area:** Inter-Regional**Information Type:** SST**Issues:**

This is a continuation and next phase of a database inventory, planning and development project funded in fiscal year 2000 (*Shared Information for Fishery Management in AYK, FIS00-016*). A data management system for management of fisheries in the Arctic/Kotzebue/Norton Sound, Yukon River, and Kuskokwim River federal subsistence fisheries management regions does not currently exist. The goal of this project is to develop a comprehensive data management system for use by all governmental and public entities involved in managing these fisheries. Ready access to critical fisheries information would be beneficial to both management agencies and subsistence users.

Objectives:

- 1) Aggregate diverse sources of fishery data.
- 2) Error-check and correct historic data as necessary.
- 3) Begin standardizing data formats, where necessary, for inclusion into a centralized database.
- 4) Develop intermediate data entry, editing and reporting programs for area staff so that more thorough error checking, editing and a standard format of data can begin as soon as possible.

Methods:

This would be the second year of a project first funded in fiscal year 2000. Activities for fiscal year 2002 would focus on completing any remaining data inventory, editing, entry, and documentation; and to correct or reconfigure important data sources that are currently in a format that would be especially difficult to incorporate into a data management system. The major information sources needed for an information management system were identified as subsistence and commercial harvests, spawning escapements, and ancillary biological data such as age, sex and size. Each of the specific objectives listed above would be completed for each of these data sources. Alaska Department of Fish and Game staff in area offices would transfer biological and recent spawning escapement data to a centralized location, Division of Commercial Fisheries Region III Biometrics Section in Anchorage, so that the work can be accomplished. Area office staff would work closely with Biometrics Section staff in editing and correcting historic data.

Several critical data sources have already been identified as needing immediate attention to prevent data loss. Editing and reporting programs would also need to be developed for some data sources. Additional problems or needs would be identified and, if possible, corrected during this next year of the project.

Deliverables/Products:

A project report detailing accomplishments; descriptions of which data have been aggregated, edited, and reformatted; and examples or descriptions of intermediate data entry forms and reports would be submitted by October 31, 2002. Also available would be an updated inventory of data sources developed during 2000 activities, including documentation on data content, storage format, any particular problems, and a primary contact; and updated examples of management reports, data access, data linkage types, and data summaries required by parties involved in fishery management.

Experience of Investigator(s):

The principal investigator has over twenty years of experience in the Arctic-Yukon-K Region as both a fisheries biologist and biometrician for Alaska Department of Fish and Game. She has extensive knowledge of how fishery data is collected, stored, compiled and interpreted to support resource management needs. She is familiar with modern database software, uses database software on a regular basis, and has developed and maintained several smaller-scale data management systems. She also worked for several years as the primary region contact and contributor on a closely related, federally funded project to aggregate salmon escapement data into a central Geographic Information System. While not assigned to this project, the Division of Commercial Fisheries has staff in their Headquarters office that could provide assistance to the principal investigator. These staff members develop and maintain several large-scale client-server databases, such as the Mariner data management system used in Bristol Bay and the Alex/IFDB data management system used in Southeast.

Partnerships/Collaboration/Consultations:

Efforts would be made to hire local residents as technicians or fisheries biologists to assist Alaska Department of Fish and Game area staff and the principal investigator with data editing. Training in the use of computer software would be provided.

Fisheries management activities within the Arctic-Y-Kuskokwim region has more and more become a cooperative effort among the Alaska Department of Fish and Game, local organizations such as the Kuskokwim River Salmon Management Working Group and the Yukon River Drainage Fisheries Association, and federal agencies. Activities have included fisheries management and restoration planning, data collection and information sharing, and pre-season, in-season, and post-season consultations. These efforts have been developing for over a decade, have increased the participation of rural residents in the management process, and have improved the management of the region's fisheries.

year of activity was approved by the Federal Subsistence Board in 2000 to complete two objectives: 1) comprehensive inventory of available data, and 2) determination of information needs of government agencies and non-government organizations involved in cooperative fishery management. This work has generally proceeded on schedule, and both 2000 project objectives will be successfully completed. A detailed progress report was submitted June 15, 2001, a short performance report is due September 3, 2001, and the final report is due December 30, 2001. A 2001 proposal to continue these efforts was requested by the Technical Review Committee. It was advanced to the investigation plan stage as study FIS 01-016, but did not receive further consideration because the investigator did not require funding until 2002. Activities proposed for 2002 consist of 1) aggregating the diverse sources of fishery data identified in 2000, 2) checking and correcting errors, 3) standardizing data formats to facilitate inclusion into a centralized database, and 4) developing intermediate data entry, editing and reporting programs to ensure more thorough error checking, editing, and standard formatting during future data collection activities. The strategic importance of making fisheries information easily accessible through a shared database is quite high. While the final scope and design of the database will be influenced by results and recommendations of the Database Working Group funded in 2001 (study FIS 01-154), proposed objectives for the 2002 study are general enough to be successfully achieved without waiting for final recommendations and protocols from the Working Group. The investigator has incorporated proposal review recommendations into the investigation plan, and has considerably reduced the amount of funding requested for this study. Full-time personnel costs would be covered by the State as in-kind matching funds. Efforts would be made to hire local residents to assist in data entry, editing, and formatting. This would help foster local interest and ownership in the final product and strengthen partnership and capacity building aspects of this work.

02-071

Assessment of Scientific Studies Relating to the Practice of Catch-and- Release Fishing in Western and Interior Alaska

Investigator(s): Sport Fish Division, Alaska Department of Fish and Game**FY2002 Budget:** \$ 59,000.00**Total Budget (2 years):** \$ 246,200.00**Geographic Area:** Inter-Regional**Information Type:** SST**Issues:**

Contemporary sport anglers consider catch-and-release a legitimate, responsible, and often desirable fishing practice. However, subsistence users in western and interior rural Alaska do not release their catches and question whether there is sufficient knowledge, applicable to Alaska, to determine the fate of released fish and to assess the potential effects of catch-and-release sport fisheries on subsistence fishing opportunity. A comprehensive summary of scientific studies of catch-and-release is not available to fishery managers and resource users, nor has there been any assessment or review of potential applications of catch-and-release practices to western and interior Alaskan fisheries. This project would coalesce and review existing information regarding effects of catch-and-release, and then convene a working group composed of subsistence users, sport users, and fishery managers to examine this information. The working group would develop recommendations for a comprehensive strategy regarding assessment of catch-and-release effects on subsistence fishery resources.

Objectives:

- 1) Coalesce available scientific studies concerning effects of catch-and-release on fish and assess their reliability and applicability to Alaskan fisheries.
- 2) Produce a catch-and-release database of these studies on the Internet, including references, comments on reliability and applicability to Alaskan fisheries, and links to each study.
- 3) Make specific recommendations to State and federal agencies for interpreting and using existing information, for establishing protocols for conducting studies, and for conducting any needed studies.

A comprehensive literature search would be conducted of all scientific journals, and additional searches would be made for State, federal, and Tribal reports, academic theses, and other sources of information. Most searches would be done through the Alaska Resources Library and Information Services. All studies found would be reviewed for both scientific reliability and applicability to Alaskan fisheries. For each study reviewed, an abstract or summary, complete reference, and review of reliability and applicability would be made available on the Division of Sport Internet site. Full-text, downloadable files of each study report would also be made available, if permission could be obtained.

During the second year of the project, a working group, composed of subsistence users, sport users, and fishery managers, would be convened to examine compiled catch-and-release study information. Group members would include fishery biologists and social scientists from State and federal agencies, as well as representatives of user groups. The group would review compiled catch-and-release information, make recommendations for interpreting and using the information, inventory catch-and-release fisheries within the area covered by the project, and identify any issues of concern. The group would also make recommendations on the needed for any further studies of catch-and-release effects, including design and conduct any needed studies, and how to use this information in management of fisheries resources. All this would be used to design a comprehensive strategy to further assess catch-and-release issues in western and interior Alaska.

Deliverables/Products:

Two main products would be available from this work. The first would be a centralized database, accessible from the Division of Sport Fish Internet site, of catch-and-release study information, in the form of full-text downloadable files and annotations concerning reliability and applicability. The second would be a written report that could serve as a comprehensive strategy guide for assessing catch-and-release issues in western and interior Alaska. The report would include a review of available catch-and-release information, recommendations for interpreting and using this information, an inventory of catch-and-release fisheries within the project area, identification of issues of concern; recommendations for further studies of catch-and-release effects, protocols on design and conduct of any needed studies, and suggestions on use of this information managing fisheries resources.

Experience of Investigator(s):

The Alaska Department of Fish and Game, Division of Sport Fish, has a long history of high quality fisheries data collection and analysis activities. The principal investigator has a strong technical fisheries background that has included the design and conduct of catch-and-release mortality studies. Other staff biologists assisting with this work also have many years of experience conducting and evaluating catch-and-release studies as well as experience in coalescing data from diverse sources. In addition, the investigator will have access to biometric support as well as computer specialists with expertise in creating and maintaining Internet sites. The Alaska Department of Fish and Game is a founding member of Alaska Resources Library and Information Services and has a full-time librarian available to assist with searches and

obtaining copies of catch-and-release studies.

Partnerships/Collaboration/Consultations:

Development of a comprehensive database on catch-and-release effects on fishes would provide a valuable tool for future capacity building between fishery management agencies and affected user groups. Formation of a working group composed of subsistence users, sport users, and fishery managers to examine this information and develop recommendations would build partnerships and develop the capacity of subsistence users to actively participate in the development of resource management strategies.

Justification:

The Technical Review Committee requested this proposal due to broad concern with effects of catch-and-release sport fishing within many arctic, western, and interior Alaska rural communities. Regional Councils for these geographic areas have identified concern with delayed mortality resulting from catch and release fishing as an issue, and have request specific studies addressing the following issues: 1) long-term mortality of released angler-caught sheefish, char, and other freshwater species, including fish that are caught multiple times; 2) delayed mortality of angler caught and released northern pike from the Innoko River and elsewhere; and 3) effects of catch and release fishing on salmon and trout behavior, mortality, and spawning success. The Technical Review Committee suggested that a working group be formed to address the general issue of catch-and-release hooking mortality by conducting an inventory of catch and release studies done within this area, examining the applicability of existing data on catch-and-release mortality as practiced within this area, and developing recommendations for any additional studies on catch-and-release mortality. The Office of Subsistence Management solicited this proposal as a vehicle to develop such a working group. Technical Review Committee requested several modifications to the original proposal and resulting investigation plan, and the investigator incorporated most of these into the last version submitted. The cost of this effort has been substantially reduced from the original request, and does not seem unreasonable when compared to the cost of past working group funded under this program. Partnership and capacity building would occur through dissemination of information of catch-and-release fish mortality studies, through participation of subsistence users in the working group, and through review of working group products by Regional Advisory Councils, rural residents, and local and regional organizations. Some reviewers still have concerns about using Subsistence Fishery Resource Monitoring Program funding to conduct work on effects of catch-and-release sport fishing on fishes. Also, while several Regional Advisory Councils and local communities have identified catch-and-release fishing effects on local fishery resources as an issue of concern, no letters of support for this study have been received. Therefore, the strategic importance of this particular study to subsistence users may not be as great as was originally anticipated by the Technical Review Committee.

Inter–Regional Overview Harvest Monitoring and TEK Projects

02-043

Alaska Subsistence Fisheries Database GIS Integration

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game**FY2002 Budget:** \$ 27,525.00**Total Budget (1 year):** \$ 27,525.00**Geographic Area:** Inter-Regional**Information Type:** HM/TEK**Issues:**

Public access to information on subsistence fisheries is an important part of the federal management and regulatory process. There is a need to make information on subsistence harvests more easily accessible in a format that is easy to use and understand. Since fishery resource use is highly regionalized within the State, a Geographic Information System would allow users to better visualize and understand where and how different communities use various fish species throughout the year. Being able to use maps to illustrate this information would be more effective and intuitive than depictions of these data using tables and charts.

Objectives:

- 1) Link subsistence fisheries information contained within the Alaska Subsistence Fishery Database maintained by Division of Subsistence, Alaska Department of Fish and Game to the Geographic Information System of anadromous stream information maintained by Division of Habitat, Alaska Department of Fish and Game.
- 2) Create search and query options, tools, and menus within integrated database to allow users to graphically display subsistence fishery information by community, location, or drainage.
- 3) Provide access to the Geographic Information System on the World Wide Web.

Methods:

The Southeast Subsistence Fisheries Geographic Information System Database, developed by the investigator and his agency during studies FIS 00-039 and 01-103, would serve as a model for this statewide project. The system of organization of numerical harvest data and analytical approaches established for the Southeast project would be adopted for the statewide information. Spatial relationships between fishing communities and streams have previously been developed in various community use area research and Southeast Alaska harbor seal harvest research projects.

To keep pace with the changing Geographic Information System technology, the Division of Subsistence would upgrade its ArcView version 3.2 software to the newly released version 8.1. Customization of this software would be accomplished using Visual Basic programming language to design query boxes, pull-down menus, summary maps and chart options. Special buttons, toolbars, and menus would be programmed to perform specific tasks for working with Alaska Subsistence Fishery Database information. To accomplish this in the most efficient and effective manner, the investigator would attend a training class in Visual Basic.

Existing Alaska Department of Fish and Game electronic map coverage would be used as base maps for the Geographic Information System. Features on the maps would be linked to data records from the Alaska Subsistence Fishery Database by converting subsistence fishery data from a Microsoft Access format to Dbase and then transferring these data into ArcView. This linking, or geo-referencing, of graphically depicted landscape features to data records was anticipated during development of the Alaska Subsistence Fishery Database through the use of the same stream reference codes contained in the anadromous fish stream Geographic Information System data catalogue maintained by Habitat and Restoration Division, Alaska Department of Fish and Game. Information related to a specific community would be linked to the map using the community name as the geo-referencing variable.

In addition to the data contained in the Alaska Subsistence Fishery Database, the Geographic Information System would contain other geographic data relevant to subsistence fisheries. For example, locations of regulatory markers defining different subsistence fisheries, showing the boundaries in and around the water bodies where fishing is permitted, would be available in the program.

The Geographic Information System would be designed and made available for public use as both a self-contained, portable system on CD-ROM, to be run using either ArcView GIS software or the free Arc Explorer program, and as an Internet application. Users would be able to select harvest information of interest by using search criteria such as year, community, fish species, and water body. Results of database selections would be displayed in the form of graphs and charts within the project. Queries based on data parameters such as communities with greatest harvests, communities with a certain level of participation, or streams with a certain number of fish harvested, would also be possible. Communities and water bodies that fit the criteria used would also be illustrated on a map. The uniform data structure of the Geographic Information System and database projects would ensure that functionality of the system would be maintained with addition of each year's harvest information.

Deliverables/Products:

The Alaska Department of Fish and Game, Division of Subsistence will produce a CD-ROM of the completed project, containing a number of scalable maps with geographic features linked to the subsistence fisheries harvest information found in the Alaska Subsistence Fishery Database. The CD-ROM will be delivered to, and demonstrated for the Office of Subsistence Management, Fisheries Information Services Division, and training in the use of the GIS will be made available. CD-ROMs would also be made available to other appropriate federal and

needed, local communities and Regional Advisory Councils would receive a demonstration of the project. The Internet-based application will also be demonstrated and made available to the public.

Experience of Investigator(s):

The Alaska Department of Fish and Game, Division of Subsistence, has generated, collected, and stored geographic information related to subsistence fisheries harvests for 20 years. The principal investigator has worked with Division of Subsistence spatial data for over two years. Projects he has worked on and supervised include a Southeast Alaska harbor seal harvest location atlas, ten different community harvest use area mapping projects, and a Southeast Alaska Subsistence Fisheries Geographical Information System Database (FIS 00-039 and FIS 01-103), which would served as a model for this proposed statewide project.

Partnerships/Collaboration/Consultations:

As has been done for the Southeast project, the Alaska Subsistence Fisheries Geographic Information System project would be available for review and use by Regional Subsistence Councils, local governments, environmental programs, and resource managers. The project would have a statewide perspective to provide access to data contained in the Alaska Subsistence Fisheries database. Individual communities or agencies could use the database as a tool in their own research, with maps and charts available for illustration and organizational purposes. For example, Division of Subsistence meetings with the Organized Village of Kake in the summer of 2000, to demonstrate and discuss the Southeast Subsistence Fisheries Geographic Information System project, led the Village to use the Geographic Information System as a model for their own traditional use area mapping and documentation projects. Other groups may choose to modify the Geographic Information System for their own particular needs as well.

Justification:

This project would provide a graphic means for selecting, analyzing, and displaying subsistence fishery information. Development and distribution of this Geographic Information System database is intended to facilitate research and fisheries management by local organizations and individuals as well as agencies. Some Regional Advisory Councils have expressed concern about the value of statewide proposals, since they feel relationships to regional priorities, regional partnerships, and regional benefits are often unclear. Benefits of this project include making in- and postseason data more easily and widely accessible via the Internet or self-contained CD-ROM systems. This information would be available as a statewide database, using a Southeast project conducted by the investigator as a prototype. Products from this work would be immediately useful for fishery managers, and would serve to build capacity for regional and local organizations by providing access to important information. Project objectives are clear and achievable, methods are technically sound, and identified products would be of wide general use. The investigator and his agency have the technical and administrative expertise to complete this project, as demonstrated by their established track record with similar projects. Consultations are ongoing at the regional level. While there are no local partners to assist in conducting the work,

results of the project would be readily available to agencies and communities in a familiar format. Several local residents, communities, and organizations have expressed concern with making some types of subsistence information widely available through publicly accessible databases, particularly on the Internet. The Office of Subsistence Management will be working with both the Solicitors Office and Contracts and Government Services Division to identify appropriate information sharing standards that can be established under existing laws and regulations. This issue is also being addressed the Statewide Database Working Group funded under study FIS 01-054.

02-047

Alaska Subsistence Salmon Harvest Timing (Phase 1): Bristol Bay, Chignik District, Cook Inlet, and Kuskokwim Drainage

Investigator(s): Division of Subsistence, Alaska Department of Fish and Game

FY2002 Budget: \$ 13,991.29

Total Budget (2 years): \$ 28,488.00

Geographic Area: Inter-Regional

Information Type: HM/TEK

Issues:

There is a lack of ready access to information on subsistence salmon harvests timing by community and harvest location. Such information is often needed to assess inseason harvest results, to evaluate impacts of regulatory changes on subsistence salmon harvest, and to select research sites for specific species and stocks. This project would also help to improve the practice of recording harvest dates on subsistence permits and calendars by demonstrating how harvest timing information can benefit subsistence users.

Objectives:

- 1) Provide a database of subsistence salmon harvests by date, species, and location for subsistence fisheries in Bristol Bay, Chignik District, Cook Inlet, and the Kuskokwim Drainage.
- 2) Graphically depict subsistence fishery harvest timing through charts showing percentage and estimated numbers of annual daily and cumulative harvest for selected time periods.
- 3) Provide a standard framework, based upon the Alaska Subsistence Fisheries Database, which can be easily updated and expanded to accommodate harvest-timing data from all subsistence fisheries.
- 4) Promote daily reporting of subsistence harvests on permits and calendars by demonstrating the utility of harvest timing information in fisheries management.

Methods:

This project would provide harvest timing information from subsistence salmon fisheries harvest assessment programs administered by the Division of Subsistence, Alaska Department of Fish and Game, in Bristol Bay, Chignik District, Cook Inlet, and the Kuskokwim Drainage. It would serve as a model for providing this information on a statewide basis. In certain situations, when

salmon run timing information is not available, harvest timing can be used to estimate run timing. However, harvest timing can often differ from salmon run timing due to local conditions and management regulations that can influence harvest and preparation activities disproportionately to resource availability.

The source of harvest timing information used for this study would be reported harvests by date between mid-May to mid-October, which would accommodate the general period of salmon runs. The harvesting of spawned out salmon (“redfish”) is poorly represented by dates of harvest, since this activity frequently occurs after permit reporting period or village surveys end. Thus, estimates of numbers of species harvested would exclude late season harvests of redfish, which is a common occurrence in certain fisheries within Bristol Bay and the Chignik areas. Harvests without specific dates would be excluded from analyses. Timing of harvests of individual species by location and user residence would be extracted from permits and calendars for each subsistence fishery. Efforts would be made to identify community, location, and year combinations for which harvest information is poorly documented. Timing data would be placed within a database modeled after, and using conventions developed for the Alaska Subsistence Fisheries Database and established by the Subsistence Fisheries Harvest Assessment Working Group in 2001 during study FIS 00-017. The resulting database would be constructed so that it could be queried for fishery, species, and location to produce tables and charts of harvest timing for specified years or multiyear averages representing either percentages or estimates of harvest numbers. Use of this database would replace the existing approach of creating tables and charts within Excel. Not only the existing method tedious, since it requires previous summarizing of data, but it also entails reiteration of all steps for each update of a year and location. This has resulted in limited usage of this information, use of out-of-date information, and a greater potential for the introduction of errors.

The summarized harvest timing information from the database would be readily available in seven formats: 1) tables showing daily percentage and cumulative percentage harvests by date; 2) tables showing estimated numbers of daily harvest and cumulative harvest by date (exclusive of “post-season” harvests); 3) charts of cumulative percentages; 4) charts of estimated cumulative inseason harvests; 5) charts of daily percentages; 6) charts of estimated daily inseason harvests; and 7) data to export into Excel spreadsheets for further analysis.

The database would be demonstrated in Anchorage for interested agencies and organizations, as well as during regional harvest monitoring workshops organized under study FIS-01-107. Initially, the harvest-timing database would be distributed on CD-ROM as separate Access 2000 entities to make it compatible with the limited computer resources that exist in many rural communities. Future integration of the harvest-timing database with the existing Alaska Subsistence Fishery Database would be explored for usefulness and utility.

Deliverables/Products:

The investigators would provide a CD-ROM containing both the Alaska Subsistence Fisheries Database and the Alaska Subsistence Harvest Timing Database in Microsoft Access 2000 to the Office of Subsistence Management and other interested agencies and organizations. An

Experience of Investigator(s):

The Division of Subsistence, Alaska Department of Fish and Game currently administers subsistence fisheries harvest reporting for the Bristol Bay area, Chignik area, Cook Inlet area, and the Kuskokwim Drainage; and has been responsible for the creation and maintenance of several databases that facilitate understanding and managing subsistence resources. Microsoft Access databases developed include the Alaska Subsistence Fisheries Database and the Community Profile Database.

Partnerships/Collaboration/Consultations:

All proposed work would be done using information collected as part of existing harvest assessment and permit systems, which have existing partnerships with various rural communities and organizations. The model developed would allow opportunities for collaboration with organizations with limited database experience that wished to add fisheries (both salmon and non-salmon species) to the database.

Justification:

This statewide project would provide harvest timing information for subsistence fisheries managed by Alaska Department of Fish and Game, and could be used as a model to develop similar capabilities for other subsistence fisheries within the State. A summary of ten years of existing data would be included in a Microsoft Access database, which would be distributed on CD-ROMs. The data would be readily available to all users, and in this sense builds capacity for partners. Bristol Bay, Chignik, Cook Inlet, and Kuskokwim Drainages all have rivers and streams under federal fishery management jurisdiction. While this proposal does not directly address an issue identified and prioritized by the Regional Advisory Councils, the project would facilitate State and federal management of salmon, including some populations of concern. By providing easy access to harvest timing curves, this type of information would be more readily used in making management decisions. Study objectives are clear and achievable. The study is appropriately designed, and the methods are technically sound. The products identified are acceptable, and would be of use to federal managers within a regional context. The investigator and agency both have technical and administrative expertise to conduct this work, as well as an excellent track record with past projects and cooperative ventures. The project would use existing subsistence data, so no additional field collections would be required. Consultations are ongoing at the regional level, and results would provide more ready access to the data for rural residents. The project would not employ or train any local residents, or be conducted in partnership with any local organizations. Several local residents, communities, and organizations have expressed concern with making some types of subsistence information widely available through publicly accessible databases, particularly on the Internet. The Office of Subsistence Management will be working with both the Solicitors Office and Contracts and Government Services Division to identify appropriate information sharing standards that can be established under existing laws and regulations. This issue is also being addressed the Statewide Database Working Group funded under study FIS 01-054.

